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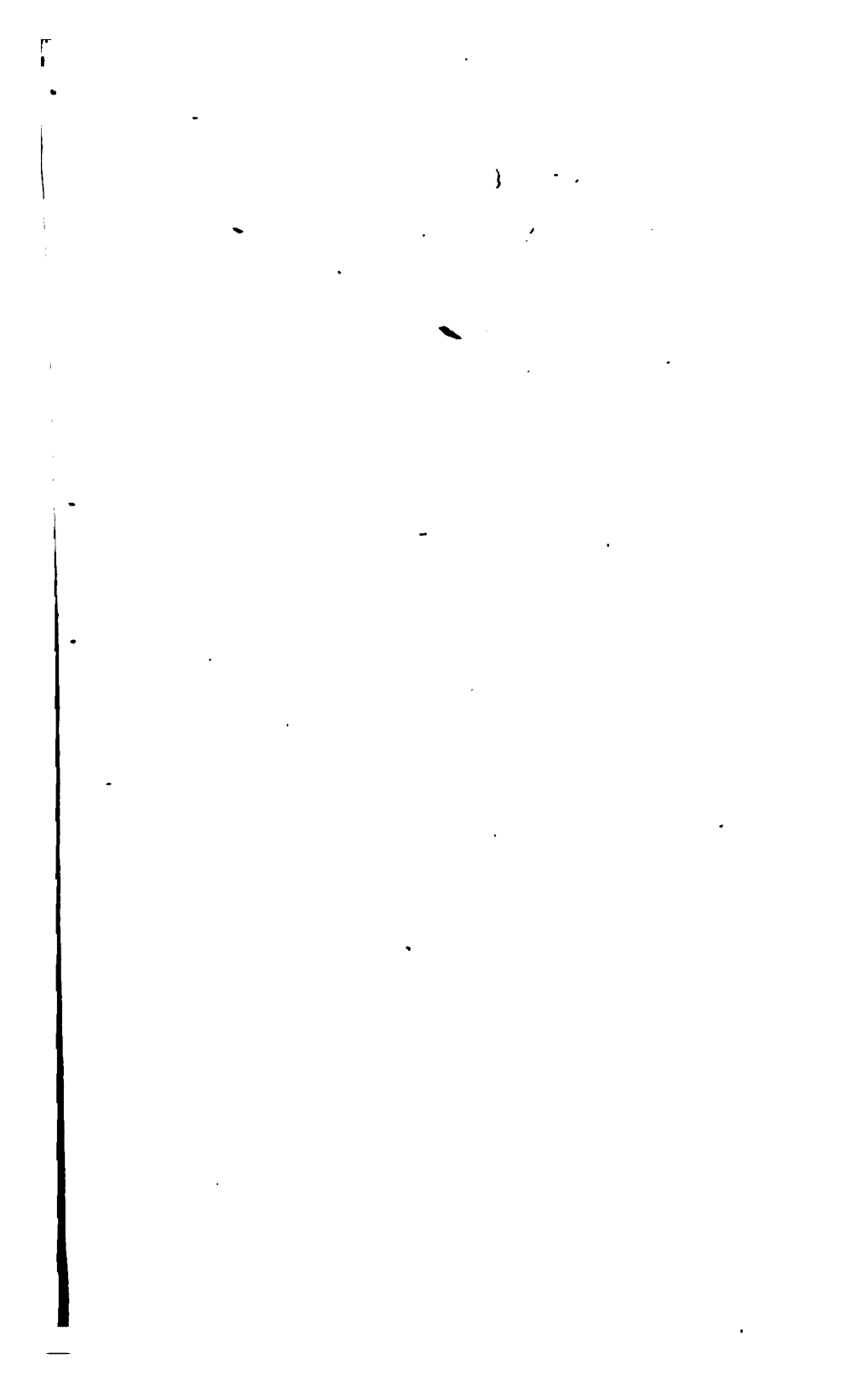
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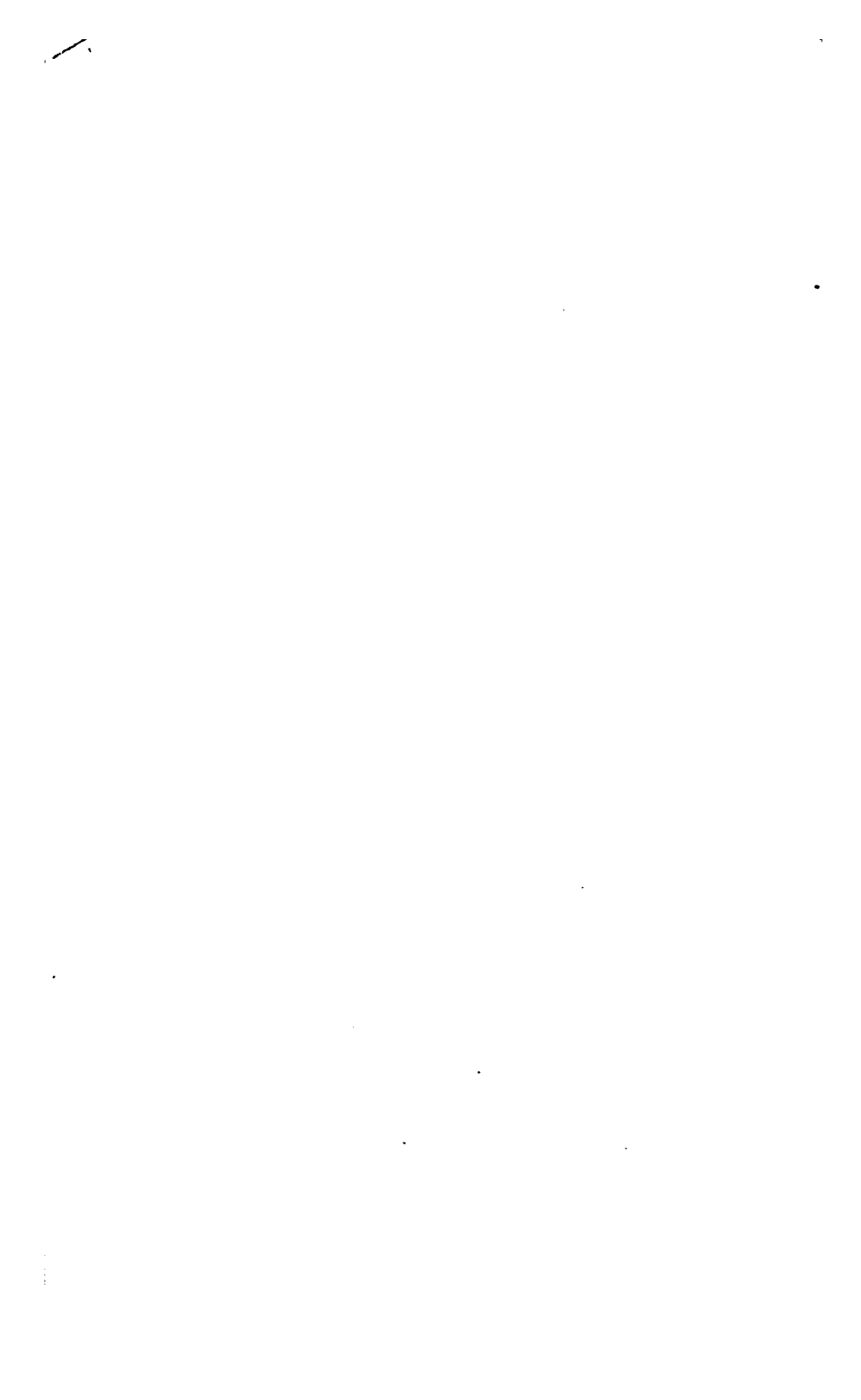


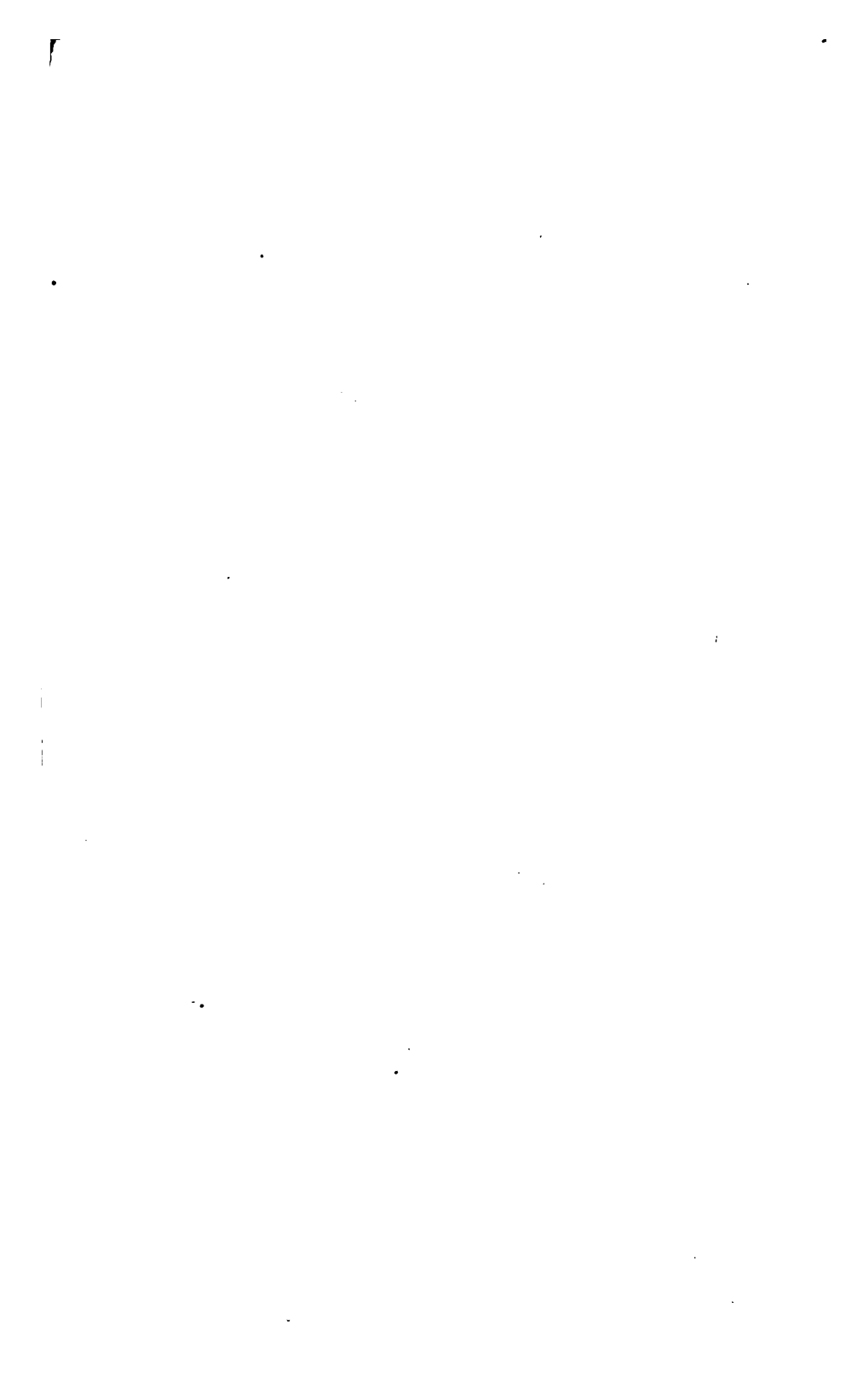
THE GIFT OF
FRANCIS SKINNER
OF DEDHAM
IN MEMORY OF
FRANCIS SKINNER
(H. C. 1862)

Received Dec. 1910.











LEVICK'S COMMANDER IN CHIEF,
Engraved for the Horticultural Register.

E. H. & Tompkins

THE
HORTICULTURAL REGISTER,

AND
GENERAL MAGAZINE,

OF ALL
USEFUL AND INTERESTING DISCOVERIES CONNECTED WITH
NATURAL HISTORY AND RURAL SUBJECTS.

VOL. II.

BY JOSEPH PAXTON, F. L. S. H. S.

LONDON:

PRINTED FOR BALDWIN AND CRADOCK, PATERNOSTER-ROW.

MDCCCXXXIII.



LEVICK'S COMMANDER IN CHIEF,
Engraved for the Horticulturist.

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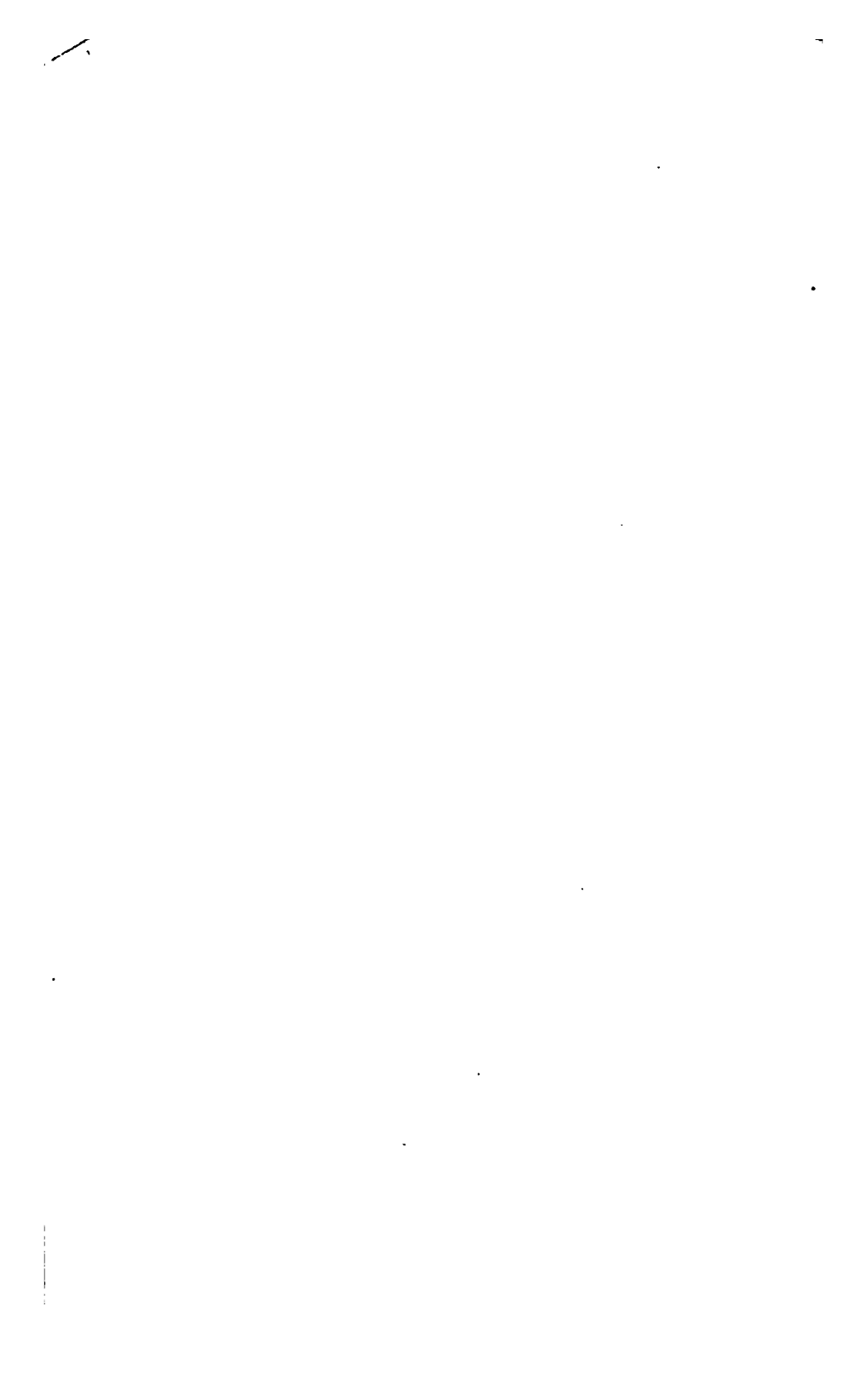
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Bell & Topping

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PREFACE.

WE have now reached the close of another year's labours, and it is highly gratifying to us to perceive that a taste for Horticultural pursuits is every where on the increase. Perhaps, without exposing ourselves to the charge of either vanity or presumption; we may take some degree of credit for having attracted more attention to so interesting a subject. The extensive and constantly increasing sale of the Register is at least evidence that our labours are approved, and the urgent demand for reprints of the early numbers is to us a most gratifying circumstance, and eminently calculated to excite us to still greater diligence in supplying whatever is novel or useful in every department of the work.

We feel confident that this second volume will, in many respects, be found much superior to the first. This improvement, however, is mainly attributable to the increased efforts of our valued correspondents. We may, without disparagement to other contributors, direct particular attention to the papers furnished by Mr. Stafford, on the steaming and ventilation of Forcing-houses, and on the destruction of the Red Spider. Mr. Stafford, Mr. Mearns, and others, have also ably detailed and elucidated the culture of vines in pots, & practise which cannot be too highly recommended. Some valuable remarks on the culture of the striped Housainee Melon, by the Author of the Domestic Gardeners' Manual, likewise deserve especial attention, but his papers on Horticultural Chemistry, begun in this volume, and to be continued in the next, are of the first importance. Nor can any essay indeed, coming from so able a writer, and so skilful an investigator, be devoid of interest. Our own remarks on the culture of Annuals, Biennials, Rhubarb, Cherries, Pears, &c., together with selections of beautiful plants for both greenhouses and flower borders, however imperfect they may be, will not, we hope, be without their use. Those furnished on the peculiarities of the structure of plants, will, at least, afford amusement, if not instruction, to those who are curious in nature's secrets. The condensed form of the extracts will

no doubt be generally approved. Our anxious wish is to disseminate, as widely as possible, all the useful knowledge contained in the leading publications of the day, while at the same time we give those valuable works as much publicity as we are able. If in any case we have failed to acknowledge the source whence articles have been culled, we hope to escape the displeasure of the Editors, for the omission was accidental. In no case can we reconcile ourselves to the practise of intruding upon the reader as our own productions, the honest labours of others.

The occasional introduction of Coloured Figures will doubtless render the work more valuable as a book of reference for particular plants and fruits, and such illustrations will be confined to the subjects most deserving of them.

We tender our warmest thanks to those kind friends who have forwarded to us their contributions, and we trust we have in this Volume, given evidence that it is our decided aim to make the *Register* a complete Library to the Practical and Amateur Gardener. With this view our labours will be resumed and continued, not doubting that we shall be honoured with renewed and increased patronage and support.

J. P.

Chatsworth, Nov. 18th, 1833.

THE HORTICULTURAL REGISTER.

JANUARY 1ST, 1833.

INTRODUCTION.

IN commencing the second volume of the *Horticultural Register*, we beg to assure our friends that no pains shall be spared to make it deserving of public approbation. When we embarked in this undertaking eighteen months ago, we stated in an introduction our reasons for commencing authors, also the plans on which we proposed to conduct the work. Our readers will not need informing, that, with the exception of omitting one of the lists, which was prepared but could not be inserted for want of room, we have not only endeavoured to redeem our pledge, but have actually gone much further, by giving the figure of a plant monthly, and printing the work on much better paper. We have felt no regret in going to this extra expence, but on the contrary, much pleasure from the very favourable reception the work has met with, as a proof this is the case, we have only to state, that, although we have never advertised since its commencement—a year and a half ago, until now, yet the sale has gradually increased, and we apprehend we shall soon be called upon to re-print all the preceding numbers. In consequence of certain local inconveniences Mr. Harrison has disposed of his share of the copyright to us, consequently, the editorship has wholly devolved upon us at Chatsworth. It must not be considered, however, that on this account our efforts are likely to become paralyzed, but on the contrary, we trust we shall show by the manner in which we shall bring out volume the second, that we have commenced with renewed vigour, as from the many congratulatory letters, and strong assurances of future correspondence, from individuals who stand very high in their profession as practical gardeners, we expect to be able to go far beyond any thing we ever contemplated at our commencement. We named in our preface to the first volume that the suggestions of Subscri-

VOL. II. NO. 1.

bers should not be lost sight of, we intend to carry every thing into execution that will tend, in any way, to enhance the value of the Register, and render it an acquisition to the libraries of both the Amateur Naturalist, and Practical Gardener.

Our very best thanks are due to those of our friends, who have so kindly interested themselves in recommending the work during the past year. All we can say is, that we hope to continue to deserve a continuance of the same favours throughout the present year, by making every succeeding number as interesting and complete as possible. According to the suggestion of a correspondent, volume first, page 225, we intend in our Naturalists Calendar, giving three or four small figures of British plants every month, to assist those Botanical students in collecting a herbarian, who have it not in their power to purchase any other work on the subject; also to those who wish to study British Conchology, and have not the means of purchasing a work on the subject, we intend in the same calendar to give one or two of our land or water shells every month. This we think will be an acquisition to the young British Naturalist, as it will place something more within his reach than heretofore he was able to obtain. By thus using means to meet the varied wants of the rising race of gardeners, they will have in a few years a large store of knowledge, which under other circumstances, might have never reached their ears. Feeling conscious of the rising importance of the work, we intend to proceed with redoubled exertions, being assured that we shall meet with every encouragement from an enlightened public, and have our most sanguine expectations, more than realized.

PART I.

ORIGINAL COMMUNICATIONS.

HORTICULTURE.—ARTICLE I.

ON THE PRUNING AND CULTURE OF VINES IN GREENHOUSES.

BY MR. JAMES BROWN, SEN.

Gardener to his Grace the Duke of Buckingham, Stowe.

THE many articles written on the management of the Vine &c. already published to the world, would render an additional communication on the subject superfluous. There are, however, so many opinions advanced on the modes of pruning; training, &c. as would rather puzzle or mislead, than assist that portion of your readers, (I don't mean practical gardeners,) who may be in the possession of a greenhouse, in which vines are grown. In small places such buildings are frequently met with, but the prevailing complaint is, if used to any extent for the growth of plants, vines do not succeed to the satisfaction of the proprietor, on whom also in many places the chief of the management depends. If a house is to be erected for the above twofold purpose, it should be light and elegant, at least so far as the means of the proprietor may be able to accomplish. Such a house as represented in Vol. 1 of your *Register*, page 682, but instead of the roof resting on the parapet wall, it should be placed on upright lights in front, sufficiently high to admit of a walk, and the back wall raised.* Such a house being heated with hot water, or brick flues, would answer admirably with a stage in the middle for the greenhouse plants. On the formation of the borders depends the future success of the vines, it ought to be raised above the surrounding surface, and sloping from the parapet wall towards the front as represented in the house alluded to. The depth should be three feet

* In proportion of course, the parapet wall, as there shown, would not require to be so high.

at least, and the breadth according to the length of the rafters, the bottom if not naturally dry should be made so by draining. The materials for the border I would recommend to be three parts out of four fresh turfy loam, and one fourth rotten dung with a layer of lime rubbish, six inches thick forming the bottom. The whole composition should be well mixed and lay some time before planting to settle. The sorts I would recommend for such houses are the Black Hambro Chasselas de Fontainbleau (the latter sort resembling the white muscadine) observing to plant three of the former to one of the latter, plants from eyes are preferable to those raised from layers; the stronger the plants, the sooner the produce may be expected. My plan of planting the vines, which are introduced through the parapet wall are not immediately under the rafter, but under the centre of each light, and introducing them under the rafter, which gives a length of stem outside of the house of eighteen or twenty inches, without fear of breaking, observing to have the part outside neatly bound with hay bonds, when the vines are introduced. Supposing that plants can be had two years old from eyes, and planted in April, take them directly into the house and cut them sufficiently low so as to admit of one or two eyes only inside. The temperature of the house at this season ranging between fifty-five and sixty degrees, the vines must submit to the heat required for the plants, and as much air as possible be admitted, taking care not to depress the thermometer below 55. Towards the end of May the plants may be removed from the house to the flower garden, &c. at which time begin to increase the temperature of the house by degrees, till the thermometer reaches to seventy and seventy-five. The house may be occupied with tender annuals such as Balsoms, Coxcombs, &c. &c. previously brought forward in frames. The Vines will advance rapidly, and in most cases will reach the top of the house before the autumn; previous to taking the greenhouse plants in, begin to lower the temperature of the house, as the plants will require much air on their first introduction, which will also benefit the vines in hardening the wood. The latter end of November take them out, and train them along the parapet wall in front, cut them in February, down to either an eye or two above the preceeding years pruning, but not to take them in before April. The same routine will be observed as regards temperature &c. as the preceeding summer, they will again reach the top of the house and in most cases acquire sufficient strength to bear a good crop the succeeding year. As soon as the wood is ripened take them out as before, and in the month of February cut them to within two or three feet of the length

of the rafter, according to the strength of each : some may require to be cut shorter. In April as soon as the vines show symptoms of vegetation take them again into the house, regulating the temperature as the preceeding summer. As the shoots advance stop them two eyes above the (fruit, except the leader, which train to the top of the house ; if fine fruit is an object more desirable than a great number of bunches, leave but one bunch to a shoot, (they will sometimes shew three) thin them properly with the grape scissors, as the berries swell. When the house is shut up for the night, sprinkle the floor all over with water, which creates a steam highly conducive to the swelling of the fruit. The same operation should be practised in the morning before air is given. The fruit will ripen the beginning of September, and will, if required, keep till December before they are all cut, take out the vines again, and in February prune them, cutting each side shoot that bore fruit, into one eye, and the leader to within one foot of the top introduce again in April. The same routine of culture will be observed in this as the preceeding summer, as regards temperature, stopping the shoots, thinning the bunches, steaming &c. When the pruning season arrives, (February) cut each shoot that has bore fruit to one eye, it frequently happens that two or three shoots will be produced at each spur, retain two of the strongest only, allowing one bunch to a shoot. Thus the spurring system will be established, it only remains for the operator to cut to an eye every succeeding year, and if two shoots are retained at each spur suppostng the rafter between fifteen and twenty feet long, from thirty to forty bunches may be expected as the produce of each vine. By such rules I have had vines bearing crops for fourteen years successively without ever cutting a vine down.

JAMES BROWN, SEN.

ARTICLE II.

ON THE CULTURE OF THE PINE APPLE, WITHOUT POTS.

BY MR. JAMES MITCHINSON.

Gardener to E. W. Pendarves Esq. M. P. F. H. S. Pendarves House, Cornwall.

ABOUT 18 months ago having three lights of our pine pit at liberty I had it filled with oak leaves to a sufficient height, these having been well trodden down and made perfectly level, I had a little earth put along the back of the pit, where the first row of plants was to stand : I then turned some succession plants out of their pots, and placing them in a row behind, filled the spaces between them with earth keeping it as light as possible ; I also put it in rather rough, that

the roots of the plants might run more freely through it. When one now was planted, I proceeded as before, till three rows were in, which filled the pit, it being only six feet wide inside, I then gave a gentle sprinkling with water, to wash off the dirt from the plants and settle the earth a little. In about a fortnight I found the plants begin to grow rather strong, which they continued to do, and in the course of the summer most of them showed fruit; and although I had some plants in pots much larger than they were, the fruits from these were finer and much better flavoured. One plant, a Jamaica pine, which did not show fruit till late in the summer, ripened this spring a fruit 4½ lbs.; and although ripe about a fortnight, it obtained an extra prize at the first exhibition of the Royal Cornwall Horticultural Society at Truro, June 29, 1832. I have now three Montserrats and a queen in fruit in the same pit, that were put out as above, seventeen months since, which are now looking extremely well, and seem likely to be both large and handsome; in fact, so great was the satisfaction I experienced from the experiment that this spring I planted, in the same manner the whole length of our pit, being seventy feet long and six feet wide; and, as before stated, containing three rows of plants. I am extremely glad to be able to say that these newly planted pines are doing equally well, and that many gardeners, as well as gentlemen, who have seen them, say they never saw finer plants or finer fruit; for my own part, I can only say I am not ashamed to show them. In winter, autumn, and spring, we use hot water to obtain the requisite degree of heat for keeping the plants in a healthy state. I also use a lining of hot dung in front of the pit, (it being placed on arches,) when occasion requires it. I find the hot water system to answer extremely well, better than any other method I have ever seen in use. I grow our succession and nursery plants in a pit built of bricks, pigeon-holed; and I use linings of dung, leaves, grass, &c. when the heat of the bed in the inside requires renewing. The plants are kept in pots till wanted for plunging out for fruiting. The saving of trouble and expence occasioned by the above treatment of the pine-apple will, I trust, be evident to all your readers: and I hope many of them will not only take my word for its being attended with complete success, but that they will give it a fair and similar trial to that I have endeavoured to state above: if they do, I fancy the result will be, that some will find that pine-apples grow, and that freely, with scarcely any bottom heat, particularly when out of pots. I have cut some very fine fruit this last week—a Green Providence and a Black Jamaica, each about five pounds, and to day a Ripley four pounds, all handsome fruit.

JAMES MITCHINSON

Pendarves, Oct. 31st. 1832.

ARTICLE III.

ON STEAMING FORCING HOUSES.

BY MR. STAFFORD.

Gardener to Richard Arkwright, Esq. Willersley Castle, Derbyshire.

THE real reason for steaming is to produce artificial dew; and various expensive methods have been adopted to attain this object, none of which are equal to the old method of pouring water on the flues in the evening, exactly in proportion to the state of the plants and other circumstances connected with the locality of the house. All the rules yet published on this subject have tended to mislead both old and young practitioners; some have recommended regular steaming night and morning, not considering the various changes in the external atmosphere, while others have adopted different kinds of apparatus to give a regular supply of vapour at all times, such as pipes, canals, &c. &c. Canals are of all the most objectionable, for if we attentively examine the state of each apartment we never find steam produced spontaneously in equal quantities, in a range of houses equal in dimensions and other circumstances; one will constantly give up abundant of vapour, whilst the adjoining one will be exactly contrary. I am at present totally unable to account for this extraordinary difference, unless it may be referred to the influence and nature of the under stratum of earth on which the house stands, which idea I think will be found to coincide with that of other practical men. Since steam has been recommended to heat hothouses, its advocates I think have too liberally extolled its congenial qualities, and I fear have led many to apply it at very improper times, and often to excess. I admit that heat and moisture are essential when properly applied, at the same time I feel satisfied many proprietors of houses would have far better success, were they not to make use of it at all. Many species of fruit may it is true be grown to a large size by this humid process, but in proportion to their size they contain as much water without either alcohol or sugar, this accounts for the best flavoured fruit being always found in the most arid part of the house. Many persons seem delighted to find the edges of the leaves hanging with drops of water in the morning; and mostly infer that the plant has thrown it out by perspiration during the night; now these drops are nothing but the condensed vapours, which the situation of the plants

have rendered incapable of being absorbed; the quality of the produce under such circumstances is invariably deficient in flavour, although its appearance may be much finer than those grown under different treatment. Much depends on the purity of the air of a hothouse, and all damp air becomes much sooner contaminated than dry. When we fill a house constantly with steam we prevent the plants in it, discharging their fluids according to the process of nature, and consequently do them serious injury, every glass roof, from its confining so many unwholesome vapours, may be rightly considered a trammel to nature. How much every greenhouse exotic is benefited in the autumn by cool dry treatment, we know by experience; the same rule ought to be observed in every department. Heat combined with too much water tends to debilitate and paralyze the energies of plants, we may obtain the object we wish, but it is at the risk of a failure the succeeding season, the wood leaf and parts of fructification are affected, and the petals not unfrequently expand of a pale colour and speedily fall off; this does not arise from the treatment of the present season, but of the preceding one, and there is no doubt but the whole constitution of the plant is entirely different from what it would have been under other treatment. Nothing is more opposed to nature than steaming in the morning; if the weather is cloudy there is no necessity for it, if on the contrary, the effects are exceedingly pernicious. The sun never appears without giving notice, and allowing time for vegetation to dry, and be prepared for its reception. I stated in page 295, volume 1, that I believed nothing tended so much to bring metallic houses into disrepute, as the close manner in which they were glazed, entirely preventing the steam and vapours escaping, and the air of the house becoming dry, and I still think if a contrary course was pursued, few or none of such houses would ever be found to fail. Nature assigns a sufficiency of moisture for vegetation in the common atmosphere, and if we administer above this portion, the effects become injurious both to present and future crops; the quantity of vapour which arises in one of the dryest houses is very great, particularly where a number of exotics are kept and daily watered. If we observe the openings or laps of the squares in the evening, when there is a current of air acting upon the roof, how quickly the vapours are replaced, after being removed. I fear many persons keep a more humid atmosphere than they otherwise would, because they conceive it a preventative against the red spider, a remedy for which I will shortly forward you. There is no doubt but the orchard crops as well as other fruits are more affected by a wet dark autumn, than by the

spring frosts; for when the blossoms appear in the spring succeeding a wet autumn, they are always found to be defective, and in many cases entirely fall off; we have a striking instance of this the present year, the autumn of 1831 was dark and damp, with cold nights; of course the wood was far from being perfect, the result was a very partial crop; now this could not be attributed to the spring frosts, for never I think was a season more free from them. I should feel pleasure in laying down rules for the application of steam, but as its use must depend on certain local circumstances, it can only of course rest with each individual operator. I shall just observe, however, that the safest rule is to apply it with a sparing hand, and never in the morning, except the weather be very dry, by no means introduce a vessel in which water is perpetually to stand, for should the weather prove dark and cold, an addition of fire is requisite, which will produce an extra quantity of steam when there is already too much. It is far from me to dictate to the practical man, I here call for his assistance on a subject hitherto much neglected. I ever feel a pleasure in communicating, as far as my abilities allow me, every thing which may render assistance to the proprietors of small forcing houses, who take a lively interest in the management of them themselves. Hitherto I have made no mention of throwing water upon plants with the syringe, this is a most essential process when done in a proper manner and at proper times; if in the morning, and the sun is likely to appear, the safest mode is to do it as early as possible that the foliage may dry, before the sun has much power, also ventilate as soon as possible for nothing under glass can dispense with water over head in a clear sun without receiving injury. In warm weather there is no danger to be entertained from syringing the foliage in the evening, but then it should not, at the same time, be thrown on the flues. I do not intend here to make mention of houses containing pine plants, for a very contrary process, is found by experience, to suit them, better than what I have pointed out for other productions. In conclusion we may rest assured that every plant grown under glass which comes under the denomination of fruit will resist cold, and have a stronger constitution if kept only moderately supplied with vapour than it would under different treatment, if we subject a plant to a damp close apartment for any length of time we deprive it of the means of accumulating those very essential ingredients, which constitute the woody fibre, and as soon as the sun or air acts upon them they at once exhibit their wants by the drooping of their foliage, as will be found strikingly observable in the early part of the season in forcing houses.

ARTICLE IV.

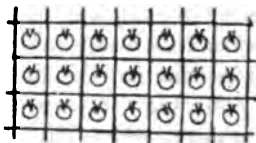
THE CULTIVATION OF THE ONION IN PORTUGAL.

BY JAMES TRIMMER, ESQ. F. L. S.

SINCE my communication on the cultivation of the onion in Portugal under the signature of "J. T." Vol. 1, p 724 I have been furnished by a friend, who has resided much in that country, with an account of the process which differs in some respects, from what I there stated. The onions are sown in Portugal about February, and as soon as they are strong enough, transplanted nine inches apart every way. In planting them out, care is taken not to insert the bulb too deep into the earth so that not more than half of the bulb at most is covered by the ground and thus left free to enlarge itself. The soil chosen is the lightest and in the coolest situation that can be had, for either a heavy or a hot soil occasions rankness in the onions.

The next point is irrigation and in that great perservance and attention is requisite; the whole bed has little channels nine inches apart cut between all the rows of onions both ways, figure 1.

The bed is formed with a little slope, so that the water finds its way through all the channels, and



thus each separate onion is surrounded on every side by water, and the roots continually feed with moisture which swells the bulb and renders it of a milder flavour, qualities in which the onions grown in Portugal greatly exceed those raised in our own country. The onions are only watered by means of the channels, as the common mode of watering hardens the surface of the ground in hot dry weather, and this rather retards the growth of the plants.

JAMES TRIMMER.

ARTICLE V.

PLAN OF A PINE PIT WITHOUT THE USE OF FIRE.

BY T. J. KNOWLIS, ESQ.

THE following plan for a pinery in which pines may be grown and fruited to great perfection without the aid of fire heat, is also applicable to every purpose of the forcing department, grapes, strawberries, early melons and cucumbers, indeed I would recommend every hot-bed to be formed upon the same plan, its chief advantages are these: that in the depth of winter a constant and equal temperature may be kept up, that the manure employed is not wasted but preserved by being protected from the rain and wind, which carry off

most of its fertilizing properties by the washing away, and evaporation of the ammonia contained in it. Another advantage is that it takes away all that anxiety from the gardener, which he naturally feels when he depends upon fire heat, it may be glazed at a small expense by using glass six inches by three with a narrow lap; vol. 1, page 577. There are no expensive pipes to pay for, no coals to buy, no flue to clean, and no encouragement given to insects. This is not a mere theoretical plan, but has been sometime in practice in different gardens, among others at Waldershare Park, Lord Guildford's, and at my brother-in-laws at Rossall Hall, where we have this year cut some very large and well flavoured pines. I have constructed my hotbeds at Heysham upon the same principle, and expect to have an excellent crop of forced rhubarb, early cucumbers, melons and strawberries. The manure of four horses is sufficient to keep up the heat of one of these large pits. Those who have many farm horses might reap some profit by raising pines, and sending them up to London, as they will bear carriage to any distance. The best way of procuring a stock of plants is to get the captain of some South American or West Indian vessel to bring over a few hundred crowns and suckers from the West Indies, where they may be had for a few pence as the hogs are there fed with the fruit. They might be packed in moss, and would keep some months out of the ground.

The bark bed in which the pines are sunk must be filled with spent bark, which may generally be had at any tannery for carriage. For pine heat it will require about ten single horse cart loads of manure to fill the lining pits, they must be replenished every month in winter, and every six weeks in summer, by taking away half the manure, namely that at the bottom, forking the top into its place, and putting five loads of fresh upon the top of that.

For the melons and cucumbers it is requisite to have a layer of good earth twenty inches thick on the top of the bark, and the heat must be moderated for fear of burning the roots of the plants, if owing to the thickness of the earth the heat between it and the glass should not be found sufficient, Mr. Knight's plan might be adopted to cause a warm atmosphere for the plants to grow in, two hollow wooden pipes might be laid in the bark, and by means of communicating pipes, having stoppers to them, the heat might be let in when required. The garden weeds, leaves, and vegetable waste, may be mixed up with the manure, and will increase its fermentation in the lining pits. The wood for the covers must be cut crosswise to prevent warping with the steam, and should be two inches thick.



a Dung pit four feet deep and two feet six and a half wide inside.

b Air Chamber to receive the steam from the Dung in the pit.

c Pigeon holed walls to admit the steam into the air Chamber (1) brick set edgeways (2) hollow cavity (3) bricks laid flat.

d Pit filled with spent bark in which the pots are plunged, twenty two feet three inches long and seven feet nine inches wide outside of the walls, covered with seven lights each made to slide.

e Outside walls which may be built of either stone or brick.

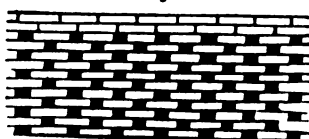
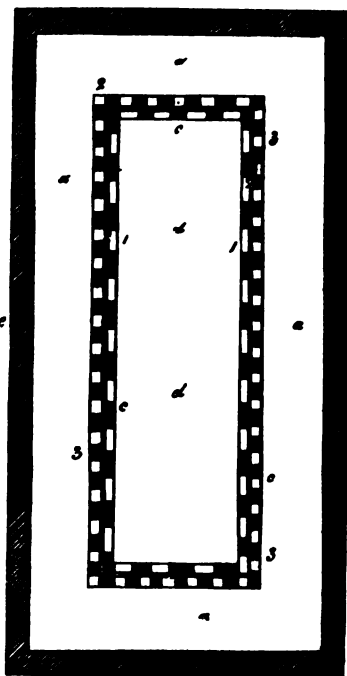
f Front view of the wall against which the hot dung is placed, the hollow spaces are to admit the steam of the dung into the chamber. *b*

g Pipes of wood to admit the hot air into the upper part of the frame when necessary, with stoppers to prevent it at pleasure, on Mr. Knight's system.

h Wooden covers to keep the dung from being affected by the wetness or coldness of the weather.

i Drain to carry off the superfluous moist from the manure.

j Ground level.



ARTICLE VI.

ON FORCING GRAPES BY MANURE.

BY MR. REYNOLDS.

IN the middle of March a hotbed is prepared, five feet thick for a three light frame, sinking the bed one foot into the border, if the roots of the vine will allow it, if not, come within four or five inches of the roots, for they will receive much benefit from the heat of the bed, likewise from the drainings of the manure. The bed is placed one foot from the vine on the wall, and is composed of one half beech or other leaves, well mixed with stable dung, it is then allowed to remain ten days to settle without the frame. Then take the exact dimensions of the frame, and being provided with four strong stakes of five inches diameter, drive them through the hot bed, at each corner for the frame to rest upon; the bed is then covered to the depth of four inches with soil, slates are placed on the top of the soil, and pressed firmly to keep the steam of the manure down, as much as possible. The vine is then unloosed from the wall and rested on the prepared bed. The frame is then placed on the four stakes to prevent its settling with the manure, and the vine is secured to a trellis, ten inches from the glass. Nothing more is now required but plenty of air for the first ten days, then gradually raise the thermometer to sixty-five or seventy degrees, keeping that heat as near as possible until the fruit is set, which is easily attained by additional linings. The back part of the frame should be secured from cold with straw and mats, to keep the remaining part of the vine outside, dry and warm. By no means suffer the stem of the vine to rest on the hotbed, as they might be scalded, or otherwise injured. The kinds I have tried are the Black Hamburgh, and Black Frontinac, each do equally well by this treatment, and swell their fruit amazingly. I conceive the reason is that they receive a constant supply of steam from the manure, with a sprinkling of water on the slates at times to assist. The size of my frame is nine feet by six feet, number of bunches 148.

Having sent you the full particulars of this simple mode, I hope some one of more experience, will not object to practice forcing vines with manure, and give the result through the channel of your Register.

M. REYNOLDS.

Campdenout, November 3rd. 1832.

ARTICLE VII.

CULTIVATION OF THE YUCCA GLORIOSA, AND TRAINING THE CACTUS SPECIOSSISIMA.

BY MR. WM. MATTHEWS.

Gardener to Lady Palmer Wanlip Hall, Leicestershire.

THE *Yucca gloriosa* is a native of North America, and although it was introduced so long since as 1596, is now by no means common; its sword shaped foliage, and gloomy appearance during its growing state, little betokens its future grandeur, and I make no doubt this is the sole cause of its not being more generally known, was planted out on the Lawn in the flower-gardens of Wanlip Hall in the year 1819, and has since then stood the severity of the winter seasons without protection; the first time it flowered was in 1829, after which the stem rooted partly down and the plant divided itself into four heads, one which I took off in 1830. I formed an artificial rock round it of granite, it soon threw out some very strong fibres into the soil among the stone.

In 1831, it flowered the second time, the extreme height of the stem was five feet eight inches, the number of side branches thirty-six, each on an average bearing twenty-four flowers, making a total number of eight hundred and sixty-four blooms, it began to flower on the twentieth of July, and this year it has again flowered, throwing up two very strong flower stems of the height of six feet ten inches which were attractive in the extreme, by then having forty side branches bearing 11 hundred fine campanulate flowers of a cream colour, I have no stipulated time for taking off the suckers, but when I do so I plant them in a soil composed of sandy loam in which they invariably flourish.

Cactut speciosissima. Having in the year 1831 two fine plants of this species I was induced by way of experiment to try the method of training them up the rafters as ornamental creepers after having been planted about twelve months one of the plants showed symptoms of flowering, and in a short time after produced eighteen very magnificent and splendid blossoms. The following are the dimensions of the plants: height seven feet eight inches; circumference of the stem six inches; of the pot two feet; the soil I used is composed of one part lime rubbish, and one part sandy loam, in which they thrive exceedingly, the degree of heat is from thirty-five to forty-five during the winter. I have grown them in the vinery from five to six feet in one season but they never showed signs of flowers after such rapid growth, I take the suckers of the plants and lay them in any airy place to dry for a week or ten days before planting, and then put them into the same compost as before mentioned.

W. MATHEWS.

ARTICLE VIII.—ACCOUNT OF SOME REMARKABLE FINE SPECIMENS OF THE BANANNA TREE, (*MUSA SAPIENTA*).

At Allon Towers, the seat of the Right Honourable the Earl of Shrewsbury.

COMMUNICATED BY MR. THOMAS UPTON.

THE parent plant, from the information I have been able to obtain, was planted January 7th 1831, in an open border, with a variety of other plants in the exotic conservatory, in a rich compost of one half rich loam, one forth sandy peat, and one forth decayed hotbed dung; previous to its removal there it had been grown in a pot, the stem then measured in circumference 1 foot 3 inches, and some of the leaves 6 feet long. It made an amazing rapid progress the following October, when it arrived at its full growth, having been planted only the short space of 9 months, its stem had increased in circumference at the basis 2 feet 4 inches, then measuring 3 feet 7 inches, and 16 feet high, it produced leaves which measured 12 feet 2 inches in length and 3 feet 8 inches in breadth. In the month of June, after it was planted the house was found to be too low to contain it, the leaves had already broken through the glass, at an height of nearly 22 feet, it therefore became necessary to shorten the leaves to keep them within bounds, this gave the plant an unsightly appearance as well as materially injuring it. In the month of April and May of the same year several suckers were produced; the first was allowed to grow, and the others were taken off. In October 1832, the first being one year and seven months old, out-measured the mother plant in the circumference of the stem by half an inch, and in its height by 1 foot 2 inches, being 17 feet 2 inches high; it also produced as fine leaves which like the former, we were obliged to shorten. In March 1832, the old plant produced another sucker which is now only 8 months old, and measures round the stem 2 feet nine inches, and is a 11 feet 11 inches high.

In April 1832 the first sucker the plant produced, threw up a sucker also, this is now 1 foot 11 inches round the stem, and 8 feet six inches high, being but 7 months old. In the beginning of May the old plant produced a third sucker, which now measures 1 foot 9 inches round the stem, and 7 feet 6 inches high, being but 6 months old.

In the beginning of April 1831 there was an appearance of the old plant fruiting, by its producing one very small leaf and in the course of six or ten days the fruit stem was visible, and by the middle of May showed 112 fruit. In the October following some few of the fruit was observed to ripen fast some of them weighed $9\frac{1}{4}$ and others 10 ounces each, and measured 9 inches long and 7 inches round, so that the whole produce of the fruit alone weighed upwards of 65 lbs. the stem the fruit was attached to, weighed 15 pounds, so the whole produce including the fruit stem would have weighed 80 pounds.

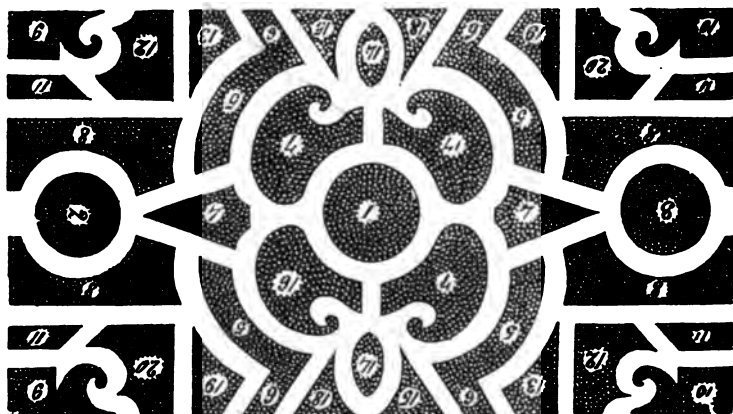
ARTICLE IX.

PLAN OF A FLOWER GARDEN.

BY MR. JAMES BROWN, JUN.

WHEN the disposition of the ground will admit, the French parterre, or Geometrical Flower-Garden, is above all other the most to be recommended, because of its readily admitting the greatest variety of flowers throughout the season. There is scarcely any difficulty in producing a splendid show once or twice in the year, spring and autumn; and in consequence of many gentlemen not residing all the summer months near their flower-gardens, the gardener has an additional advantage in such places, to produce at the time required, the best display of flowers. Where a constant supply is required, much care and attention is also necessary to produce them.

3



The Parterre affords the greatest facilities, planting in masses produces the most imposing effect, arrangement of the beds, and contrasting of colours, is the chief thing to be considered; succession of plants is also indispensable; the propagating by cuttings, seeds &c., and keeping in reserve to turn out when a bed is ready to receive them.

If there is no greenhouse, cold frames will answer for wintering almost every requisite plant for the flower-garden in the spring,

provided the glass be covered with matting, sufficient to prevent the frost entering; frames will be required to raise the tender annuals in the spring. Such a plan would look best, with gravel walks and box edgings in front of a conservatory, green-house, or dwelling-house. In planting the beds much depends on the taste of the proprietor, with regard to his favourite flowers, yet I conceive that if planted in the following manner they would give general satisfaction.

Supposing the ground work finished according to the annexed plan, the scale of which must be adapted to the quantity of ground occupied.

Plants occupying the beds in spring.—1 Hyacinths of sorts; 2 Tulips of sorts; 3 Narcissus of sorts; 4 Viola of sorts, standard rose; 5 Crocuses of sorts; 6 Viola of sorts; 7 Herbaceous plants and roses; 8 Hyacinths of sorts; 9 Ranunculus of sorts; 10 Anemone of sorts; 11 *Mathiola annua*, scarlet and purple, turned out of pots; 12 Herbaceous and Annuals; 13 *Mathiola annua*, scarlet and purple, turned out of pots; 14 Viola of sorts, standard rose in centre; 15 *Oenothera macrocarpa*; 16 Ranunculus, bordered with snowdrops; 17 Tulips bordered with snowdrops; 18 *Mathiola annua*, scarlet and purple, turned out of pots.

Plants, in summer and autumn.—1 Choice Dahlias of sorts; 2 do. do; 3 do. do; 4 *Verbena Melindris*, standard rose; 5 *Calceolaria* of sorts; 6 *Fuschia gracilis* and *mycophylla*; 7 Herbaceous plants and roses; 8 *Heliotropium peruvianum* and scarlet *Pelargoniums*; 9 *Salvia fulgens* and *splendens*; 10 *Salvia fulgens* and *involuta*; 11 *Lobelia erinus* and *albus*, standard rose; 12 Herbaceous and annuals; 13 *Mathiola annua*, sown in spring; 14 Viola of sorts, standard rose in centre; 15 *Oenothera macrocarpa*; 16 *Campanula pyramidalis* and *Lobelia effulgens* mixed; 17 *Campanula persifolia* and *Lobelia splendens*; 18 *Mathiola annua*, scarlet and purple, sown in spring.

JAMES BROWN, JUN.

Stowe Gardens, Nov. 9th, 1832.

from every class of proprietors, whether the philosophical economist, who looks with anxiety for the mode of occupying and supporting an excess of population, or the juvenile sportsman who seeks the mode of multiplying his game, and increasing the number of his *garde de chasse*; the woods he plants will serve the first purpose, and kindly treated, his band of foresters will assist in protecting them. Improvement by plantation is at once the cheapest, and the least precarious mode of increasing the immediate value, as well as the future income of estates; and for that reason it is we exhort proprietors to take to heart the exhortation of the dying Scotch laird to his son, "be aye sticking in a tree Jock, it will be growing whilst you sleep."

A MOUNTAINEER.

ARTICLE XI.

ON THE PRUNING OF FOREST TREES.

(*Supplementary Paper.*)

BY THE AUTHOR OF THE DOMESTIC GARDENER'S MANUAL, C. M. H. S.

I DID not imagine that I should have occasion to offer any remarks on this subject in addition to those contained in the three papers commencing vol. 1, pages 241, 389, and 595 of the *Horticultural Register*; but after attentive perusal of the various articles that have appeared in the work, and which probably have been deemed by their writers to be conclusive arguments against the hypothesis that I advanced; I have endeavoured to forward this supplementary communication, in order to remove any doubts on so important a subject, that may perplex those who are interested in the enquiry.

There is a remark in a recent article by "An Arborist," which claims particular attention because of its plausibility, and tendency to mislead the judgment, unless it be correctly applied: it is this, "Trees do not," he observes "like animals, wear out their organs, for they are provided with new ones every year; no necessary cause of death, therefore, is inherent in their nature. The vessels and fibres forming the external layer, which add every year to the circumference of the stem, where the life of the plant principally resides are wholly new, and so unconnected with the layers of preceeding years, that the latter may be removed by hollowing out, without killing the

tree. The *concentric circles* observable on the tranverse section of the stem of a tree, mark successive generations." It is not my present intention to controvert opinions thus advanced, as I have already in vol. 1, page 394, alluded to the various hypotheses on the origin of buds and other annual developments, &c. I have no hesitation to assert that whatever be the period or origin of these annual processes, whether they be the actual production of each current year, or on the contrary, be co-existent with the branch on which they are protruded and deposited, remaining dormant until excited by the vital energy of the plants, certain it is, that if these buds or "new organs" as they are styled by "an Arborist", be removed by pruning "the vessels and fibres forming the external layer, which add every year to the circumference of the stem," must be diminished and curtailed just in proportion to the loss and abstraction of those vital organs which he justly considers to be the origin of the external annual layers. In other words, if these new annual layers, termed *liber* and *alburnum* originate solely in the descending currents from the buds and leaves, then it follows of necessity that, to remove those organs, all, or any part of them, must be to retard the advance of the tree to a corresponding extent; for the loss or injury inflicted on the generating organs, must inevitably lead to a deterioration, either in quality or quantity, of the matter which it is their natural office to deposit.

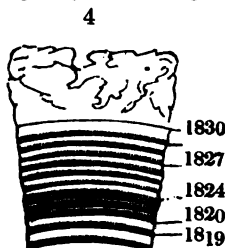
That the buds and leaves are the actual agents in the production of new fibrous matter, will be shown by what remains to be adduced; and I cannot, I think, more effectually support my own argument, than by presenting to your readers, an extract from a paper which I had the pleasure recently to peruse in the transactions of the society of arts, vol. 48, page 213. The original communication was made by a Mr. I. Goss, and is thus noticed:

"It is well known to vegetable physiologists of the present day, that timber, on the trunk of a tree, is composed of concentric layers, or rather cylinders of wood, each cylinder being the produce of one year. It is likewise generally agreed, that the fibrous part of these cylinders is an aggregate of the fibres, (or roots as they may without much impropriety be called) which originate from the base of each leaf-bud, and descend to the ground, insinuating themselves between the inner bark, and the outer sap wood, covering the surface of this latter."

"It is evident, therefore, and was long ago observed by Duhamel, that any natural circumstances which remarkably increase or diminish the number of leaf buds in a tree, will occasion a correspondent

modification in the thickness of the layer of wood produced by them. Artificial circumstances, such as lopping in the autumn or early spring, diminish the number of leaf-buds, and would be expected to be followed by the deposition of a thinner layer of wood than usual. The investigation of the effect produced by lopping, is the object of Mr. Goss's communication."

"In January, 1829, a neighbour to Mr. Goss having some ash-pollards with fine tops, of about twelve years growth, lopped off the heads of five of them. Last winter, 1830, he obtained permission to cut out a few chips from these in order to ascertain the effects of so unsparing an excision. The accompanying diagram (4) represents one of these specimens, and shews the rate at which the branch was growing in 1819 and 1820. The three succeeding very narrow segments shew the retardation that took place in the growth during the three years immediately following the lapping. After this time the annual deposits of wood began to increase, but so slowly that it was not till 1829 that the thickness of the years ring equalled what had been the annual average growth of the tree previous the lopping."



RURAL AND DOMESTIC ECONOMY.

ARTICLE XII.

ON THE MANAGEMENT OF BEES IN CASHMERE.

COMMUNICATED BY I. T.

From the Manuscript Papers of the late Mr. Wm. Moorcroft, published in the Second Volume of the Journal of the Royal Geographical Society.

EVERY farmer in Cashmere has several bee-hives in his house, and in some houses I have counted as many as ten. A provision is made for these in building the house, by leaving appropriate cavities in the wall, and which somewhat differ in size, but agree in their general form, each being cylindrical, and extending quite through the wall. The tube thus formed is lined by a plastering of clay mortar, about an inch in thickness, and the mortar is worked up with the

chaff or husk of rice, or the down of thistles, which latter is employed for clay mortar in general, being the first application of this substance to the use of man, which I have yet witnessed. The dimensions of a hive are, on an average, about fourteen inches in diameter, and, when closed at both ends, about twenty or twenty-two inches in length. That end of the cylinder nearest the apartment is closed by a round platter of red potting ware, a little convex in the middle but with the edges made flush with the wall by a luting of clay mortar, and the other extremity is shut by a similar dish, having a circular hole, about a third of an inch in diameter in the centre.

It does not appear that there is any particular rule for the height of these hives from the ground, as they are sometimes confined to the walls of the lower basement story, generally appropriated to cattle in the farm houses of Cashmere; others are inserted into those of the first floor, and are frequently in both situations in the same house, as well as the walls of its outbuildings. So little difference exists betwixt the practice ordinarily pursued in Cashmere and in Europe, in respect to hiving new swarms when the honey is taken, which deserves imitation. Although the season for taking the honey had passed when I visited Cashmere, in the beginning of November, the cottagers indulged my wish of seeing the process by which this was effected, but with little injury to the bees, and with perfect safety to the individuals concerned in its management, and which was as follows:

Having in readiness a wisp of dry straw, and a small quantity of burning charcoal in an earthen dish, the master of the house, with a few strokes of the point of a sickle, disengaged the inner platter of the tube, bringing into view the combs suspended from the roof of the hive, and almost wholly covered with bees, none of which however, offered to resent the aggression or to enter the room. Having placed the straw upon the charcoal, and holding the dish close to the mouth of the hive, he blew the smoke strongly against the combs but removed the stand the instant it took fire, to prevent it burning the bees, and quenched the flame before he employed it again. Almost stifled by the smoke, the bees hurried through the outer door with such rapidity that the hive was cleared of its inhabitants within a few minutes, when the farmer, introducing the sickle, cut down the combs nearest to him, which were secured into a dish previously slid under them, and left undisturbed about one-third of the combs which were almost close to the outer door. He then replaced the inner platter, and brushing off hastily a few bees that clung to

the combs; though apparently in a state of stupefaction, threw them out of the house. Observing many other bees lying motionless on the floor of the hive, I inquired whether they were dead or only stupefied, and was answered that they would recover; preparations for continuing my journey at a very early hour on the following morning, having unluckily prevented my examining the spot where they had been thrown, until poultry had for some time been feeding near it.

The expelled bees returned as soon as the cavity was freed from smoke, without stinging a single individual, and the whole business was completed within less than ten minutes, without, as was asserted, any perceptible loss. The honey was light coloured, and of a taste as pure and sweet as that of Narbonne. It possessed less of the cloying quality generally attending this substance, than any other I recollect to have met with, nor could I learn that the farmers had any suspicion of its ever being intoxicating or poisonous, as in the case occasionally with that made by the Bhoara (*Apis irritabilis*) or large wild bee in the northern mountains of Gurwhal, from feeding, as it is reported, on the flower of the monkshood. I was directed more particularly to inquire upon this subject by having observed this plant in flower in the valley of Bunga, a few miles to the eastward of the bee district, and think probable that it extends to these mountains.

The peasantry of Cashmere are unacquainted with the employment of honey as the basis of a fermented liquor, but eat it raw or mixed with articles of common food, whilst the most wealthy substitute it for sugar in preserving fruits. It is customary to take the hive every year; about the end of September, or the beginning of October, is found the best season for this operation; a little time still remaining for the bees to add to the portion left for their support during five months. This amounts to about one-third of the whole produce, and would appear to suffice, as swarms seldom die, and the Cashmerees substitute no other article of food. It is stated that an old swarm yields more honey than a young one, and that families seldom die except of old age. I was informed that it was no common circumstance to preserve the same community for ten or even fifteen years, and some instances were quoted of a family having been retained for twenty years; but this was held to be a very rare occurrence. In consequence of the bees being thus literally domesticated they acquire a mildness of conduct far more decided than those of Europe, and it is possible that the confidence thus gained, subduing their natural irascibility, may generate an increase of industry, or at

least, an increase of produce in relation to the number and size of the individuals of each community. It is also clear that the situation of the hive keeps many of the natural enemies of the bees at a distance. The bee of Cashmere is a little smaller than that of Europe, though a little larger than the domesticated bee of Kumaon, and of Gurwhal.

The Bhoura, the rock bee of Gurwhal, or the bee of the southern mountains, is, on the other hand, greatly larger than the domesticated bee of Europe, and greatly exceeds it also in the number of individuals in each community, and in the size and weight of its combs. But its honey is sometimes contaminated by an intoxicating quality, and the temper of the insect is so irritable as to be brought into a dangerous state of activity by a slight show of aggression. The former quality is suspected, upon probable grounds, to be caused by the secretion of the aconite eaten by this bee, and its irritability of disposition to be owing partly to the exposed situation of the combs suspended from the lower surface of a ledge of rock, and partly to the occasional attempts of bears to carry them off. Both these detractions from the merit of this bee are merely the result of localities; and under due precautions it is presumed that its irascibility might be so far subdued as to render it just as safe an inhabitant of a wall hive, as the smaller variety of bee. In a portion of the Panjab, near the hills, this bee is also met with; and I have seen the under surface of the principal branches of a large Peepul tree studded with so many colonies, individually of such great strength, as to deter the neighbouring peasantry from attempting to deprive them of their stores, notwithstanding it was conjectured that there were several hundred weight of combs on the tree. The largest of these assemblages of combs, the probable accumulation of several seasons, was of such a size as I think it not prudent to cite; but from the specimens I have seen of the produce of this bee, I conceive their domestication, if introduced into Europe, would prove a most valuable acquisition to this branch of farming, although I must confess myself unable to devise any safe and easy plan for transporting such a colony.

NATURAL HISTORY.

ARTICLE XIII.—THE STUDY OF THE SCIENCE OF BOTANY.

BY F. F. ASHFORD.

(Continued from Volume 1, page 743.)

THE vegetable kingdom is divided by Linnæus into seven families or tribes, viz :

- | | |
|---------------------|---------------------|
| 1 Musci, Mosses. | 4 Graminæ, Grasses. |
| 2 Fungi, Mushrooms. | 5 Algæ, Flags. |
| 3 Filices, Ferns. | 6 Palmæ, Palms. |

7. Palantæ comprehending all plants that are not included in the other six tribes, these are :

Herbaceous when they die down to the radix (root) every year, for in the perennial kinds, the buds are all produced upon the root below the surface of the ground.

Shrubs, when their stems come up without buds.

Trees, when their stems come up with buds.

Of the habit of Plants.—By the habit or external face of plants, is to be understood a certain conformity between vegetables that belong to the same genus, or are near of kin to each other. This conformity may be in respect to various circumstances as,

1 Placentation, the disposition of Cotyledons (seed leaves) at the time when the seed is beginning to grow.

2 Radication, the disposition of the Radix or root.

3 Ramification, the manner in which a tree produces its Rami, or branches.

4 Intorsion, winding, is the flexion or bending of any part of the plant.

5 Gemmation, the construction of the gem or bud.

6 Foliation, the complicate or folded state of the leaves whilst concealed in the bud.

7 Stipulation, the situation or construction of the stipulæ (a species of fulcra or prop.)

8 Pubescence, downiness, an armature for defence.

9 Glandulation, disposition of the glands, or secretory vessels.

10 Lactescence, milkiness, a juice which flows from any injury.

11 Inflorescence, the manner in which flowers are fastened to the plant.

As the terms here enumerated will furnish a future communication I shall forbear the explanation of them in the present article, but proceed on with the

Hybernacula of Plants.—The hybernaculum or winter lodge is that part of a plant which incloses or protects the embryo, (future shoot) from external injuries, it is of two kinds, viz.

I. Bulbus, a bulb, is an hybernacle placed on the descending caudex, it is of various kinds, namely,

1 Squamose, consisting of imbricate lamellæ (thin scales) as in *Lilium*.

2 Solida, consisting of a solid substance, as in *Tulipa*.

3 Tunicate, consisting of many tunics (coats) as in *Cepa*.

4 Articulate, consisting of lamellæ that are joined together as in *Adoxa*.

II Gemma, a bud is an hybernacle placed on the ascending caudex it consists either of

1 Stipulæ, appendages to the leaves.

2 Petioles, footstalks to the leaves.

3 Cortical squamea. scales of the bark,

4 Or Rudiments of the leaves.

Of the Fulcra of Plants.—Fulcrum or prop, is a term used to express those small parts of plants, the chief use of which is to strengthen and support them. There are seven kinds of Fulcra, viz.

1 Stipula is a scale or small leaf, stationed on each side of the base of the petiols, (leaf-stalk) or pedunculus (flower-stalk) when they are first appearing as in plants that produce papilionaceous (butterfly-shaped) flowers.

2 Bractea, a floral leaf, so called when it differs from the rest in colour and form, and always close to the flower.

3 Spina, a thorn, is a kind of sharp weapon, or armature proceeding from the wood of the plant.

4 Aculeus, a prickle, is the same sort of armature proceeding from the cortex (outer bark) only.

5 Cirrhus, a clasper or tendril, is a filiform (thread shaped) spiral band, by which a plant fastens itself to any other body.

6 Glandula, a little gland, a kind of pap, or teat, serving for the excretion of some humour.

7 Pilus, a hair, is a sort of bristle serving for an excretory dust to the plants.

Of the Sex of Plants.—Plants in respect of sex take their denominations from the sex of their flowers, viz.

1 Hermaphrodite plants, are such as upon the same root bear

flowers that are all hermaphrodite, i. e. flowers that contain both stamens (male part) and pistils (female part) in the same blossom as in most genera.

2 Androgynous, male and female, such as upon the same root bear both male and female flowers separate, as in the 21st class Monoecia.

3 Male, such as upon the same root bear male flowers only, as in the 22d class Dioecia.

4 Female, such as upon the same root bear female flowers only, as in the 22nd class Dioecia.

5 Polygamous, such as either on the same, or on different roots, bear hermaphrodite flowers, together with either or both sexes, as in the 23 class Polygamia.

Of plants that are polygamous on the same root, there are three cases, namely,

1 Male Hermaphrodite, and Female Hermaphrodite flowers.

2 Hermaphrodite and male flowers.

3 Hermaphrodite and female flowers.

Of plants that are polygamous on two distinct roots, the cases are four, namely,

1 Hermaphrodite flowers and male.

2 Hermaphrodite flowers and female.

3 Hermaphrodite, flowers, and both male and female.

4 Androgynous and male.

Of plants that are polygamous on three distinct roots, the case is one, namely,

Androgynous, male and female.

F. F. ASHFORD.

(To be Continued.)

COLLECTIONS AND RECOLLECTIONS.

ARTICLE IV.

GIGANTIC SPECIMEN OF COCKSCOMB.—(*Celosia cristata*)—grown at Eaton Hall, near Congleton, the seat of G. C. Antrobus, Esq. The stem of this plant from the surface of the mould to the top of the head thirteen inches and a half, length of the head from point to point twenty-eight, and breadth twelve inches, measuring the convolutions of the head, (that is, if the head was straightened on a board) ten feet and a half; the head is of an elliptical form, and

both points meet, one inch, below the bottom of the head. The leaves are nine inches long, and four inches broad, the head is very compact, and of a beautiful crimson colour. The plant is still in good health and appears likely to continue so for some time.

Congleton, Oct. 9, 1832.

J. GIBSON.

THE ANEMONE.—The history of this flower is curious. It was brought to France in the early part of the 18th century, we believe from Persia. The kind first introduced was the semi-double or seed bearing variety: the gentleman who brought it to Paris was exceedingly jealous of his flowers, and no entreaty could prevail upon him to part with one of them; but they were at last procured by a trick. A person to whom he was shewing his parterre, let fall his clock, as if accidentally, on the anemone bed then in seed, and hastily gathering it up, with an apology for his awkwardness, some of the seed, as was intended, stuck to the velvet, which a servant, who was in the secret, hastily picked off and concealed. The seed thus obtained was sown, grew, and by the liberality of the ingenious plunderer, the flower soon became common in Paris, and throughout Europe.

Ringwood Hants.

A SUBSCRIBER.

ACCOUNT OF THE HEAVIEST GOOSEBERRIES GROWN IN 1832.—

Red. Lion, 27 dwts, 13 grs. Young Wonderful, 27 dwts. 13 grs. Briton 26 dwts. 10 grs. Companion 26 dwts. 6 grs.—*Yellow.* Leader 26 pennyweights and 9 grains. Gunner, 25 dwts. 17 grs. Teazer, 25 dwts, 6 grs. Two-to-one, 25 dwts. 3 grs. Duck wing, 23 dwts. 21 grs.—*Green.* Mr. Brathertons new seedling, called the Bumper, 30 dwts. 18 grs.; this is the heaviest green on the gooseberry record. Peacock, 25 dwts. 8 grs. Invincible, 23 dwts. 20 grs. Lord Crewe, 22 dwts. 11 grs.—*White.*—Ostrich, 24 dwts. 20 grs. Fleur de lis, 23 dwts. 9 grs. Eagle 23 dwts. 6 grs. Chorister 24 dwts. 7 grs. There are five new Red seedlings, five yellow, four white, and nine green issued this year, which are expected to prove a valuable acquisition.

M. SAUL.

PEACHES GROWN ON SEEDLING PEACH TREES.—There is now (Oct. 6, 1832) growing in the neighbourhood of Windsor, two most thriving Peach Trees of the michaelmas or late sort; covering at least twenty feet of wall, which seven years ago were raised from stones. They were placed in a garden pot, and shortly after they made their appearance, were planted in the situations they now occupy. Though never innoculated or grafted they bear the most luxuriant fruit; this autumn I measured several of them, and found them eight inches in circumference; the variety from whence the stocks were raised, precisely agree with the present fruit.

G. S. SOMERSET.

SUPERIOR METHOD OF PROPAGATING *HYDRANGEA HORTENSIS*.

—I take cuttings about six inches long from shoots having flowers fully formed, pot them of singly into sixty pots with a mixture of maiden loam and well rotted leaf mould, then place them in a shady situation in the stove or vinery, where they will strike root freely, tilting the glass for a week or two before they are fully exposed to the external air, potting a few of them in peat earth, makes an excellent blue variety. I am not partial to Mr. Ashford's method of drying specimens, (see vol. 1, page 741) instead of spreading the leaves and petals in any regular form, I would prefer laying them in their natural habits as near as possible, so that they may be more accurately distinguished when dried.

M. K.

SUBSTITUTE FOR BELL-GLASSES.—An easy method of striking cuttings may be had recourse to by providing some squares of glass large enough to cover the pots intended to contain your cuttings. If the corners of these squares are taken off, making the shape of each an octagon, they will not be liable to be disturbed or broken. Before the cuttings are planted, let the pots be two thirds or half filled with earth according to the length of the cuttings, so that when planted they may not touch the glass. By this method the enormous expence of bell-glasses and much time is saved, as the squares do not require drying, but merely turning once or twice a day when they become damp.

SAMUEL APPLEBY

Doncaster, Sep. 3rd. 1832.

WHEAT IN THE WEST INDIES.—In volume 1, page 617, you speak of the failure of wheat in some hot country. It reminds me of a story told by Labat, in his very valuable and most curious book on "the Natural History of the West Indies," it is old, but by far the best book of the kind I ever read, and hope this notice of it may attract attention. He says, page 366, "one Sellier, an inhabitant of my parish in Martinique, sowed some wheat, which was brought from France; it came very well into leaf, but the greater part of the ears were empty, and the others had very few corns; but those which were born in the country when sown, grew wonderfully and produced the most beautiful ears, and as well filled as you can imagine. Sellier pounded them in a mortar, made flour and bread of them, presented it to the church, I blessed and distributed it to the people."

"With respect to seeds," he says, page 366, "they ought always to be carried in their husks, and after all you must not expect that the first crop will be large; it will be very indifferent. The seeds must naturalize themselves to the country, and when that is done, they will produce marvellously. I made an experiment with some

peas which came from France; they produced very little the first year, the second, they produced more; but the third they produced in an extraordinary manner both for number, size and goodness. Again, page 386, "Raddishes, parsnips, carrots, and beet, come to perfection (in Martinique) especially when you sow creole seed, that is, seed born in the country. These are most important facts, and may be of great value to those who colonize. A. B.

SELECT LIST OF ANNUALS, with their respective heights.—*Hardy.* May be sown in the open borders from the end of February to the end of April. Those marked with an asterisk may probably be found the most valuable.

White. *Omphalodes linifolia* (Venus's Navel wort) 6 inches high; *Iberis odorata*, 6 inches; *Androsace macrocarpa*, 9 inches; * *Delphinium Ajacis* (Rocket Larkspur) 1 foot; *Oenothera tetraptera* 1 foot; * *Prismatocarpus Speculum* var. *album*, (white Venus's looking glass) 1 foot; *Iberis Lagascana* 1 foot; *Calendula hybrida* 1 foot.

Purple.—*Valerianella congesta*, 6 inches; * *Iberis spatulata*, 6 inches; *Prismatocarpus Speculum*, 1 foot; *Eutoca multiflora*, 1 foot; *Cleome speciosissima*, 18 inches.

Blue.—* *Nolana paradoxa*, 6 inches; *Lupinus bicolor*, 9 inches; *L. mieranthus*, 18 inches; *Convolvulus tricolour*, 18 inches.

Yellow.—*Lotus arenarius* 6 inches; * *Madia elegans*, 18 inches; * *Coreopsis tinctoria* (*Calliopsis bicolor*) 2 feet; *C. Atkinsoniana* *Helianthus lenticularis*, 3 feet; *H. petiolaris*, 3 feet; *Lupinus luteus*, 2 feet.

Rose or Pink.—*Mathiola tricuspidata*, 6 inches; *Palavia rhombifolia* 1 foot; * *Delphinium Ajacis*, 1 foot; *Silene Armeria* (Lobel's catchfly) 18 inches; *Elsholtzia cristata* 18 inches; * *Pleotocephalus americanus*, 3 feet.

Scarlet and Crimson.—*Eucroma* (*Castilleja*) *coccinea*, 6 inches; *Amaranthus hypocondriacus* (Princes Feather) 2½ feet; *A. caudatus* (love lies bleeding) 3 feet. *Saponaria calabrica*, 6 inches.

N. B. The varieties in the colours of sweet peas, and rocket larkspurs, are so numerous that they are purchased generally in mixed colours.

Half-hardy. Requiring to be sown under hand glasses, or on a moderate hot-bed in March, and transplanted into the borders, the end of April or beginning of May.

White.—* *Argemone grandiflora*, 18 inches; *Nicotiana multivalvis*, 2 feet; * *Petunia nyctaginiflora* 2 feet.

Purple.—* *Clarkia pulchella* 18 inches; *Oenothera Romanzovii*

18 inches; * *Schizanthus Hookeri* 2 feet; *Convolvulus major* 10 feet; *Gentiana humilis* 4 inches.

Yellow.—*Calceolaria pinnata* 2 feet; *Anthemis* (*Cladanthus*) *arabica* 18 inches; * *Zinnia multiflora flava*, 18 inches.

Blue.—* *Clintonia elegans* 6 inches; * *Isotoma axillaris* 1 foot; * *Callistema indica* 1 foot; *Trachymène cærulea* 2 feet; * *Ipomœa hederacea*, 10 feet.

Scarlet and Crimson.—* *Zinnia violacea coccinea* 2 feet; * *Z. multiflora rubra* 2 feet; * *Eccremocarpus scaber* 10 feet.

Variegated Flowers.—* *Schizanthus retusus* (fig 6) 18 inches; *Collinsia grandiflora* 9 inches; * *Hibiscus africanus* 2 feet; * *Schizanthus pinnatus* 2 feet; * *S. Grahmi* 2 feet; * *S. porrigens* 2 feet; * *Salpiglossis picta*, 2 feet; *S. Atropurpurea* 18 inches.

China and German Asters; Russian, Ten week, and German stocks are not enumerated in the above, in consequence of the very numerous varieties; seeds of each variety may usually be obtained in the seed shops mixed together in one paper.

Tender Annuals which require to be kept under glass all summer, they should be sown about the end of February and kept in a brisk heat, until the greenhouse plants are removed in May out of doors, when these are intended to fill up the vacant places.

White.—*Gomphrena globosa alba* 1 foot; * *Nierembergia linearæ-foia*, 6 inches.

Blue.—*Salvia foliosa*, 18 inches; * *Browallia grandiflora*, 2 feet; * *Commelina cucullata*.

Purple.—*Gomphrena globosa* (globe amaranthus) 18 inches; * *Salpiglossis integrifolia*, 1 foot; *Lobelia hypocrateriformis*, 1 foot.

Rose or Pink.—*Cleome rosea* 18 inches, * *Centroclinium reflexum*, two feet.

Yellow.—* *Salpiglossis linearis*, 1 foot; * *Martynia lutea*, 18 inches; * *Loasa volubilis*, 18 inches; *L. hispida* 2 feet; * *Manulea argentea*, 18 inches.

Scarlet.—* *Indigofera endecaphylla*, 1 foot.

Variegated.—* *Gomphrena globosa striata*, 1 foot.

The varieties of the Balsom, Cockscomb, and Capsicum, are very numerous, and are generally to be obtained with the different colours mixed.

ON THE TRIFOLIUM INCARNATUM.—As an addition to our spring food for cattle, a new species of clover has been introduced from Italy into the agriculture of this country. It is called "*Trifolium incarnatum*," and bears a beautiful head of bright red flowers, resembling sainfoin in colour. It requires a good soil, and the mode of cultiva-

ting it hitherto pursued has been to plough up a wheat stubble immediately after harvest, and sow the seed at the rate of eight pounds to an acre. It produces a large burden, which comes to use at the commencement of the following May, a period when such a supply of green food must be of incalculable value, and which will admit of a crop of turnips following in succession.

FOR THE FOOT ROT IN SHEEP.—Gold leaf, three ounce ; verdgris, six ounces ; vitriol, three ounces ; burnt alum, three ounces ; all to be well pounded to a fine powder ; this boiled in one and a half pound of common honey, and used cold. The foot, when thoroughly washed and cleaned, to be anointed with the ointment as soon as the malady is observed, and once a day if it has lasted any time. It has never been known to fail even with the Merino's so subject to the disorder. The receipt was purchased of Count Rosenberg's shepherd, near the Hague, by Sir John Sinclair.

POTATOE YEAST.—Boil some mealy potatoes till quite soft, then rub them through a cullendar, put as much hot water as will make them of the consistence of common yeast, but not thicker ; add to every pound of potatoes two ounces of moist sugar, and when warm stir in two spoonsful of common yeast, and keep it warm till it has done fermenting. In 24 hours it will be fit for use. Note—One pound of potatoes will make a quart of yeast, and when made it will keep some weeks. A larger quantity should be used than of the common yeast. The bread should be eight or ten hours before it is baked.—*Cot, Mon. Vis.*

FLAX.—After flax seed is sown, if common salt, in quantity double the seed sown, be strewed over the surface of the ground, a crop, in every other respect treated in the usual manner, will be greatly increased in quantity.—*Ibid.*

A SUBSCRIBER.

PART II.

REVIEWS AND EXTRACTS.

REVIEWS.

BRITISH FLOWERING PLANTS.—Drawn from Nature, and Engraved under the direction of Wm. Baxter, A. L. S. F. H. S. &c. in octavo numbers, each containing four plates, and descriptive letter press: coloured, one shilling, uncoloured sixpence.—On reviewing this work, vol. 1, page 655, we stated that the objects proposed by the author in publishing it was, to supply the lovers of botany with correct figures of plants at a cheap rate. We also noticed what we thought a very great deficiency, viz. the want of letter-press. Our reasons for again reviewing is in consequence of this deficiency being now entirely removed, instead of two coloured figures as then proposed for sixpence, there are now four coloured ones for one shilling, or four plain for sixpence, including in each number four leaves of letter press, stating the scientific and English names: Linnæan Class and Order; Natural Order; Generic and Specific Characters; References to the most popular Botanical works; Localities; Time of flowering; Descriptions of the Plants; and figured Dissections, showing the essential characters. The figures give a pretty correct idea of the plants themselves, and in the five numbers before us, there are twenty plants nicely coloured. We wish it the greatest success, and have no hesitation in recommending it as calculated to be eminently useful to those who wish to become acquainted with our British plants at a cheap rate.

OPINIONS OF EMINENT MEDICAL MEN ON VEGETABLE DIET in reference to Cholera; pamphlet, 32 pages, price three-pence. During the raging of that dreadful epidemic, the Asiatic cholera in London, in the months of July and August last, a rumour was current, that by eating vegetables and fruit the body became more predisposed to receive the disease. To such an extent did this report prevail, that the market gardeners were nearly ruined. A Committee of the Gardener's society wrote to thirty of the most eminent physicians in London, requesting their opinions as to the truth of the current report. Their respective answers occupy the whole of the pamphlet, and all without any dissent agree that the use of vegetables and fruit is not only not injurious but in connection with animal food, and eaten with moderation, is highly beneficial and most conducive to the health and vigour of the body.

As the terms here enumerated will furnish a future communication I shall forbear the explanation of them in the present article, but proceed on with the

Hybernacula of Plants.—The hybernaculum or winter lodge is that part of a plant which incloses or protects the embryo, (future shoot) from external injuries, it is of two kinds, viz.

I. Bulbus, a bulb, is an hybernacle placed on the descending caudex, it is of various kinds, namely,

1 Squamose, consisting of imbricate lamellæ (thin scales) as in *Lilium*.

2 Solida, consisting of a solid substance, as in *Tulipa*.

3 Tunicate, consisting of many tunics (coats) as in *Cepa*.

4 Articulate, consisting of lamellæ that are joined together as in *Adoxa*.

II Gemma, a bud is an hybernacle placed on the ascending caudex it consists either of

1 Stipulæ, appendages to the leaves.

2 Petioles, footstalks to the leaves.

3 Cortical squamea. scales of the bark,

4 Or Rudiments of the leaves.

Of the Fulcra of Plants.—Fulcrum or prop, is a term used to express those small parts of plants, the chief use of which is to strengthen and support them. There are seven kinds of Fulcra, viz.

1 Stipula is a scale or small leaf, stationed on each side of the base of the petioles, (leaf-stalk) or pedunculus (flower-stalk) when they are first appearing as in plants that produce papilionaceous (butterfly-shaped) flowers.

2 Bractea, a floral leaf, so called when it differs from the rest in colour and form, and always close to the flower.

3 Spina, a thorn, is a kind of sharp weapon, or armature proceeding from the wood of the plant.

4 Aculeus, a prickle, is the same sort of armature proceeding from the cortex (outer bark) only.

5 Cirrhus, a clasper or tendril, is a filiform (thread shaped) spiral band, by which a plant fastens itself to any other body.

6 Glandula, a little gland, a kind of pap, or teat, serving for the excretion of some humour.

7 Pilus, a hair, is a sort of bristle serving for an excretory dust to the plants.

Of the Sex of Plants.—Plants in respect of sex take their denominations from the sex of their flowers, viz.

1 Hermaphrodite plants, are such as upon the same root bear

flowers that are all hermaphrodite, i. e. flowers that contain both stamens (male part) and pistils (female part) in the same blossom as in most genera.

2 Androgynous, male and female, such as upon the same root bear both male and female flowers separate, as in the 21st class Monoecia.

3 Male, such as upon the same root bear male flowers only, as in the 22d class Dioecia.

4 Female, such as upon the same root bear female flowers only, as in the 22nd class Dioecia.

5 Polygamous, such as either on the same, or on different roots, bear hermaphrodite flowers, together with either or both sexes, as in the 23 class Polygamia.

Of plants that are polygamous on the same root, there are three cases, namely,

1 Male Hermaphrodite, and Female Hermaphrodite flowers.

2 Hermaphrodite and male flowers.

3 Hermaphrodite and female flowers.

Of plants that are polygamous on two distinct roots, the cases are four, namely,

1 Hermaphrodite flowers and male.

2 Hermaphrodite flowers and female.

3 Hermaphrodite, flowers, and both male and female.

4 Androgynous and male.

Of plants that are polygamous on three distinct roots, the case is one, namely,

Androgynous, male and female.

F. F. ASHFORD.

(To be Continued.)

COLLECTIONS AND RECOLLECTIONS.

ARTICLE IV.

GIGANTIC SPECIMEN OF COCKSCOMB.—(*Colosia cristata*)—grown at Eaton Hall, near Congleton, the seat of G. C. Antrobus, Esq. The stem of this plant from the surface of the mould to the top of the head thirteen inches and a half, length of the head from point to point twenty-eight, and breadth twelve inches, measuring the convolutions of the head, (that is, if the head was straightened on a board) ten feet and a half; the head is of an elliptical form, and

whistling with a great variety of notes, whilst seated on a stone on the edge of a running rivulet. Redwings (*Turdus Iliacus*) are now very numerous with us, as are also the Fieldfares (*Turdus pilaris*) one of the former was singing the other morning with a sweetness and variety of notes we were not aware they possessed.

MOLUSCOUS ANIMALS.—Under large stones, and amongst decayed leaves in woods may be found *Virtrina pellucida* (6) the shell is half an inch long, not so much in height, extremely thin and transparent, of a pale watery green, and quite smooth, the animal chiefly lives on wild fruit or herbage. In the gardens may be found scattered about, the *Testacellus Scutellum*. The species of this singular genus are found attached to the lower extremity of a slug with the spiral apex pointing towards the tail, which Mauge supposes to be intended as a covering for the orifice of the cleft in which it secretes itself during the day-time. In close edges under stones and other sheltered places are secreted numbers of the *Helix nemoralis* (8) a common well known snail, destructive to fruits, &c. in the evenings of spring and summer they crawl forth in search of food, and soon after the dawn of day retire to their hiding places; they form a delicious banquet to the Song Thrush (*Turdus musicus*) who with no small ingenuity searches them out, and breaks their shells against a stone. And in damp shady places the *Helix sericea* (9) generally takes shelter, the shell is transparent, yellowish horn colour, hairy, with nearly 6 tumid volutions; the animal feeds upon fruits, &c.

INSECTS.—Amongst others may be found occasionally under the branches of fruit trees. A number of caterpillars of the *Pieris crataegi* (Fig. 8) they live in societies under a silken web, in which they form little cases to secure them from the winter. At the approach of spring they break this web, and as they find at that time but few buds, they do great mischief to the trees; every evening they return to their web, and do not quit it on rainy days.

8



METEOROLOGY.—A wet summer is always followed by a frosty winter, but it happens occasionally that the cold extends no further. The true cause of cold is to be found in the winter excess of west wind, being followed by a cold summer; and if there is no cold before, or during a first excess, then a second excess of west wind in winter occasions a still colder summer than the first. It also ap-

pears by repeated experience, that cold does not extend to more than two years at a time. Again if the winter excess of east wind be great in the first instance, the winter will be mild, and followed by mild summers; while the summer excess of east wind is itself, in the first instance, always mild, but uniformly followed by cold winters and cold summers, which continues more or less for one or two years, according to circumstances.—*Mackenzie*.

EVAPORATION.—It has been ascertained by the experiment of M. van Marum, that vapours are more largely exhaled from the summits of lofty mountains, than from the plains below, in consequence it is supposed of the diminution of atmospheric pressure.

SOCIETIES,

CONNECTED WITH HORTICULTURE AND NATURAL HISTORY.

LONDON HORTICULTURAL SOCIETY.

The exhibitions of the two October meetings of this Society were particularly good. The most attractive articles consisted of a specimen of the *Cucurbita clavata*, or Trumpet Gourd a delicate variety grown at the Marquess of Salisbury's from seed obtained from Italy. Black Prince, W. Frontignan, and Black Hamburgh grapes from Mr. G. Leslie, gardener at Stoneham Park, Southampton; Princes Golden Nectarine, Rosanna Peach from a standard, Wheat-eat Carnations, Scarlet Arbutus, and a fine collection of 54 sorts of apples, from Mr. Joseph Kirke. Dahlias from Mr. J. Young, of Epsom, who also exhibited a peculiar and handsome variety, named Levick's Incomparable; its fine crimson colour blotched with white, drew much attention. Fruit of the Banana, of *Passiflora edulis*, and *P. laurifolia*, from the Earl of Shrewsbury. Seedling plums from T. A. Knight, Esq. and a Queen Pine four pounds and three quarters weight, from H. J. Grant, Esq. of Heath, South Wales. The collection of flowers and fruit, especially the Pears from the Society's garden, were much admired. We observed specimens of the Doyenne blanc pear from Quince, Thorn, and Mountain Ash stocks, the maturity of those which are produced from the Thorn is to be found greatly accelerated whilst those from the Mountain Ash are retarded to a later period.

The communications made to the Society were on the cultivation of the striped Hoosainee persian melon, by the author of the Domestic Gardeners Manual. On the production of early peas by Mr. T. Blake, and a description of the varieties of cherry cultivated in the Society's garden, with a new system of classification by Mr. Robert Thompson.

At the meeting on the 6th of November, Mr. George White, gardener, to Sir R. Hill, exhibited a fine specimen of the Green St. Vincent Pine apple from a sucker planted Sept. 1830; Mr. R. Ibeson, of Doncaster, some large bunches of an unnamed grape grown in the open air. Mr. D. Money, three varieties of grape named the Muscat Escholata, Escholata superba, and the British seedling. Mr. Allnutt contributed some excellent white Muscadine grapes, and Black Hamburgh do. the produce of vines both protected and exposed, and Mrs. Marryatt, of Wimbledon, a superb collection of Passion flowers and a Cactus truncatus. The collections of apples, pears, chrysanthemums, and dahlias, were also very interesting. We observed on the table six varieties of grapes from the Society's garden, from which are obtained the Rhenish wines.

A communication was made to the Society by Mr. Kendall, F. H. S. on the employment of cats as guardians of fruit trees from the attacks of birds, each animal having a certain range and being secured by a light chain to a stake. By this means, or by their chain running on a rod, they have proved themselves very serviceable.

MONTHLY HORTICULTURAL CALENDAR.

FOR JANUARY.

VEGETABLE DEPARTMENT.

Cauliflower plants in frames, &c. must be well protected from frosts at night, and have plenty of air in the day time.

Asparagus.—Continue planting new beds on a slight heat.

Lettuce plants in frames &c. must be kept free from rotten leaves, or they will be liable to perish.

Early Frame Peas, and Maxam Beans should be sown in pans or boxes, about the latter end of this month, and placed on the flues of the stove, to transplant out for the first crop.

Potatoes may be planted about the middle of the month, in sandy soil on a slight hotbed, or in boxes, in either case sow a thin crop of Radishes and Lettuce over them.

Mushroom Beds out of doors must be kept free from damp litter. After gathering the mushrooms, cover them well from the frost.

Rhubarb Roots may now be regularly taken up and planted in an old Pine pit, or in any situation where they will receive a slight heat; and if covered with pots like those used for Sea-Kale, the stalks will have pushed sufficiently for use in a fortnight.

FLOWER DEPARTMENT.

Roses in Pots now placed in the forcing houses will produce flowers in March.

Ranunculuses now planted in frames will bloom in April.

Mignonette and Ten-week Stocks may be sown about the latter end of the month, in pots, and placed on a very slight hotbed; the former in a light sandy, maiden soil, perfectly free from dung. As soon as they appear, be cautious to give them plenty of air.

Auriculas should be top-dressed the latter end of this month, or beginning of February.

Dahlia seed should be sown about the end of this month or beginning of next, and a few of the old roots may be plunged in a little old tan, or a moderate hotbed.

Tulip Beds will require occasionally sheltering.

Forcing.—Continue to take into the stove, Lilacs, Pinks, Hyacinths, &c. as may appear necessary.

FRUIT DEPARTMENT.

Pruning and Nailing should now be attended to at every convenient opportunity. Peaches and Nectarines, however, would be better delayed until the beginning of February, or at least until the buds have advanced a little, as pruning them too early sometimes proves injurious, if the weather should afterwards be very severe.

Strawberries for forcing continue to bring in once a fortnight.

Peach Houses, where the fruit is wanted early, should not be delayed; be careful, however, that the heat from the flues is very moderate at the commencement, or the probable consequence will be the loss of the whole crop of fruit. If Peaches and Nectarines in pots, be placed along the flues, they will ripen their fruit at least three weeks earlier than those trained on the trellis. The trees in the houses closed at the end of Nov. or beginning of Dec. will now be out in blossom, and by the end of the month the fruit will begin to set, they will now bear the heat of from 60 to 66 degrees, by day. Be careful not to syringe them while in blossom, but keep the flues very moist, and give plenty of air during the day time, and you may ensure a good crop of fruit setting, if the trees are healthy.

Cherry Houses should have the glasses put on in the beginning of the month, and a little fire put in the flue in order to dry up the damp; but be particularly cautious to give as much air as possible, and never allow the heat to rise much higher than from 45 to 50 degrees, Fah. for the first month. Cherries in pots might also be placed over the flue, after the manner of Peaches; these would be earlier than those trained on the wall, although there is less dependence on a crop of fruit from pots.

Vines in Pots now brought into the vinery will ripen their fruit early in May. For the mode of pruning see page 4, and also Vol. I.

THE HORTICULTURAL REGISTER.

FEBRUARY 1ST, 1833.

PART I. ORIGINAL COMMUNICATIONS.

HORTICULTURE.—ARTICLE I.

ON GROWING EARLY POTATOES, AND TRAINING FRUIT TREES.

BY MR. MEARNS,

Gardener to His Grace the Duke of Portland, Welbeck, Notts.

UNWILLING to take up any portion of your useful publication unprofitably, I would most gladly decline entering into any controversy with any one, as it would be annoying to your readers, and not pleasant to yourselves; therefore, ere I reply to the "Journeyman Gardener," I will make some amends by transcribing extracts from two letters received from T. A. Knight, Esq. our indefatigable and excellent president, upon the cultivation of that most useful root, the Potatoe, which I flatter myself will be read with great interest by many; and I beg to state, for the information of those who do not know that talented and amiable gentleman personally, that they may depend upon the correctness of his statements.

"I have seen the result of some experiments upon potatoes;—plants of which I have obtained of very vigorous habits, which do not at all expend themselves in producing blossoms, and which are, in consequence, most extremely productive. I entertain little doubt of being able to raise a produce next year, from my best variety, exceeding per acre 800 bushels of 80 lbs. each; I have every reason to expect of the very first quality."

"I venture to hope, that a publication of the means of obtaining such varieties, and a dispersion of such new mode, will be productive of much public benefit."

The act of picking off the blossoms, as soon as they are formed, has been found highly beneficial; but it is much better that the plant should throw them off by an act of its own.—22nd November, 1830.

"I am engaged in experiments upon potatoes, which interests me very much, because, I am certain, that the culture of that plant presents the means of raising vastly more animal food than the culture of any other. I had a crop dug up three days ago, of a new and early variety, just obtained from seed, (in which state it is, I think, much more productive,) in the presence of several farmers and gardeners; and accurately weighed, when the produce per acre was found to be 964 bushels of 80 lbs. each, and 64 lbs. over; or 34 tons. 8 cwt. 3 qrs. 25 lbs. and I do not entertain any doubt of being able, if I live long enough to gain proper varieties, of raising 1000 bushels, of 80 lbs. from an acre of ground. And I am further very confidently of opinion, that if the crop of potatoes be wholly consumed upon the ground, or the whole manure produced by them, if eaten by animals, be returned to the soil, *that* will grow annually richer, and be capable of affording still better crops.—29th Sept. 1832."

Whilst I am upon the important subject of the potatoe, I beg here to remark, that the method quoted on page 754 of vol. 1, and there called an American mode, is only more productive than the one in common practice, upon Mr. Knight's plan: that is, by the exposure of the largest possible *surface* of foliage to the *light* and influence of the atmosphere, and of keeping the soil round the tubers, and roots as loose as consistently may be done. The practice of loosening the soil round the plants is more attended to in Herefordshire, and the contiguous parts of the surrounding counties, than I have elsewhere seen; but there they omit one most important part of the business, by planting *too late*; and therefore allowing the tubers to expend themselves before planting, which is a point that Mr. Knight is very careful to guard against, by every means he can devise; and it is undoubtedly one point of management of the greatest importance towards the success of the future crops.

I now beg your indulgence to allow me a small space for a reply to the Journeyman Gardener, but who, I am persuaded, by his manner of writing, has not yet passed out of his apprenticeship, for if he had, his *small* experience in life alone would have taught him a little more modesty in his manners and opinions, than to lead him to

fancy, he was capable of laying down rules for training fruit trees, to all the practical gardeners in toto.

Previous to my advancing any further, it may be of some service to him to give him the following, by way of motto :—

“The morning finds the gard’ner at his task,
 Bred to the art, *intent*, what e’er it may :—
 Proud of his well spread walls, he views his tree,
 That meet (*no barren intervals between.*)
 With pleasure more than ev’n their fruits afford,
 Which, save himself who train them, none can feel :
 These, therefore, are his own peculiar charge ;
 No other hand may discipline the shoots,
 None but his steel approach them. What is weak,
 Distemper’d, or has lost prolific pow’rs,
Impair’d by age, his *well taught* hand
 Dooms to the knife : nor does he spare the soft
 And succulent, that feeds *its giant growth*,
But barren, at the expense of neighb’ring twigs
 Less ostentations, and yet studded thick
 With hopeful gems. The rest, no portion left
 That may disgrace his art, or disappoint
 Large expectation, *he disposes neat*
At measur’d distances, that air and sun
 Admitted freely, may afford their aid,
 And ventilate and warm the swelling buds.
 Hence summer has her riches, autumn hence ;
 And hence ev’n winter fills his wither’d hand
 With blushing fruits, and plenty, not his own,
 Fair recompence of labour well bestow’d,
 And wise precaution, which a clime so rude
 Makes needful still, whose spring is but the child
 Of churlish winter, in her frowned moods
 Discov’ring much the temper of his sire.
 For oft, as if in her the stream of mild
 Maternal nature had revers’d its course,
 She brings her infant forth with many smiles ;
 But, once deliver’d, kills them with a frown.
 He, therefore, timely warned, himself supplies
 Her want of care, screening and keeping warm
 The plenteous blooms, that no rough blast may sweep
 His garlands from the boughs. Again, as oft
 As the sun peeps and vernal airs breathe mild,
 The fence withdrawn, he gives them ev’ry beam,
 And spreads his hopes before the blaze of day.”
 Still not unmindful of his *many cares* ;
 All well repaid, his vigilance attends
 The whole, anxiously pleas’d that all around
 Crown his highest hopes with lavish’d plenty,
 And be the delight of all who view the scene.

If I may judge his meaning of the expression "old world fashion," I must conclude that he means the antediluvians; and he fancies, my method of training fruit trees, but little removed from the practice in those ancient times; but it is very doubtful, whether they even thought of walls for fruit trees in the antediluvian ages. The Journeyman Gardener, as he professes to be, must have very little skill in the powers of vegetation, if he is not capable of rearing a fruit tree from the seed in the spring of 1833, and by the end of 1834, to have carried it considerably higher than a twelve feet wall, and securely budded at that height too, with any other kind of fruit of the same affinity, which may be agreeable to him. His form of training, Fig. 117, (*which, by the bye, to keep his ellipsis up, leaves one-third of the wall bare,*) is no other than the peacock-tail form, which, had he attended to before he had criticised upon my method, he would have found that I condemned; but I trust, ere he becomes a critic again, that he will pay a little more attention to the subject he means to subvert, or else he may find that he is meddling with an edged tool. He calls a tree figured p. 722, elliptical, whilst it has nothing of an ellipsis but its oval form; and if it is to retain such a form, I should wish to know how he means to furnish the top of his walls; does he intend to adopt my method of pendant training, and to act so illiberal as not to inform us? I call all trees trained in such a form the peacock tail, as it is a very striking appellation to every one; and to know much of elliptical figures, requires some little skill in the mathematics, which, probably, the Journeyman Gardener may be better acquainted with than the training of trees.

The method of training fruit trees which I pointed out, I have proved the beneficial effects of, many years ago; by the result of practice, and not *treacherous* theory, I feel a real pleasure in being able to do any good I can for my fellow-creatures; and those who choose to adopt the methods of training which I have laid down, (I published them for the information of those who were desirous to be informed upon such matters, and not for the over wise,) in the London Hort. Trans. Vol. 4, page 246, and Vol. 5, page 44; also at pages 449, and at page 482 to page 486 in your Register, will find good reason to applaud rather than condemn them.

If it should please God to spare me, and I remain a few years at Welbeck, ere long I hope to prove to the Journeyman Gardener that I can produce plenty of fine fruit upon trees that have lived more than thirty years barren; and by the methods only which he judges too antiquated for this refined age.

Nature points out for us, if we will attend to her, those forms that

dispose most trees to produce fruit: when the boughs begin to incline towards the earth by their own weight, they soon form blossom buds, and if the seasons are favourable, bear fruit in a very great abundance. It may, probably, astonish the Journeyman Gardener, when he is informed, that I have trained shoots of the pear, *pendant*, in one season, from three to four feet; and *that* down a very *slender stem*, planted two years, which has produced blossom-buds at its extremity; and the following season some fine fruit, with a stem fourteen feet high. The case is a common one, and is known to many practical gardeners. If the Journeyman Gardener will be so obliging as to let me know his address, it may be in my power to pay him a visit, and see the *fine* walls of fruit trees of which he has the conducting; for I perhaps have always taken a greater interest in that, than any other branch of my profession, although, as he fancies, I have made such little progress in it. I think his tree, Vol. 1, fig. 118, must look very curious, and perhaps, in his eye, very ornamental, although I doubt not, more fruitful than horizontal, which have maintained their station for between twenty and thirty years, through a *judicious management of spur pruning!*

It would be much better, if those who felt an itching to become critics, were not to conceal either their names or address, as, by having some knowledge of their rank in society, we might be induced to be less severe, from a feeling of respect which may be due from us: it is a respect due to themselves, and it would be acting more manly towards those whom they are disposed to attack.

I should think it most ungracious in me to make any censurable remarks in your publication, upon the communications of any one; for I applaud every one who contributes his mite towards such a work, as far as he is able. Such a cheap work upon the subject was long wanted, and I hope it will be well supported by masters, journeymen, and 'prentice gardeners. But no disputes about methods, until they are first proved unsuccessful. But I suspect that the remarks upon my paper, was by some young novice, as its commencement bear evident marks.

Now that I have done with the Journeyman Gardener for this time; I beg leave to press a third time, upon the notice of your readers, the importance of *flat pieces of glass* for the purposes of propagation, instead of the usual chrysal-bell glasses, which, for most purposes of that kind, are worse than useless. I had occasion to notice them in the London Hort. Trans. so long ago as 1820, (Vol. 4, page 411.) I also noticed it in your Register, page 473; and I am surprised to find, that none who visit me practice it, or

have even heard of it. I am well assured, that if once adopted, the bell glass will be but little used. I approve much of exposing all cuttings *at night*, to the atmosphere of the house in which they are placed; but when the flat glasses are used, it is not so much required, as plenty of atmospheric air is admitted between the pot and glass, whilst a sufficient vapour is kept up by the opaque sides of the pot, to preserve the cuttings till rooted. To facilitate the emission of roots, atmospheric air is the great acting agent, but is not so much attended to as it ought. Little shading is required through the brightest sun-shine, as the sides of the pots are generally found sufficient; and when any vapour is collected upon the under side of the glass, no time is lost in wiping them, but only reverse the sides, and it is soon dissipated. There is no occasion to *waste* the glass, by cutting it in circular, or even to cut off the corners, as I find no sort of inconvenience in them; and the pane may be used for glazing purposes, when it is done with. I have been in the habit of using them since 1803, and I have had every reason to be pleased with the practice. All propagations of the sort *succeed best* when exposed *at night to the atmospheric air*. Whilst upon the subject of air, and the beneficial effects of large portions judiciously supplied, being well known to those experienced in the forcing department, I beg here to notice, that I consider its admission *at night*, into those departments of greater importance; and I would rather use a little more fire heat than to be without plenty of air.

ARTICLE II.

THE CHINESE METHOD OF PROPAGATING FRUIT TREES

BY ABSCISSION.

COMMUNICATED BY I. T.

Abridged from Dr. Howison's Paper in the Transactions of the Society for the Encouragement of Arts, Manufactures, and Commerce for 1807.

THE Chinese, instead of raising fruit trees from seeds or from grafts, as is the custom in Europe, have adopted the following method of increasing them.

They select a tree of that species which they wish to propagate, and fix upon such a branch as will least injure or disfigure the tree by its removal. Round the branch, and as near as they can conveniently to its junction with the trunk, they wind a rope, made of straw, besmeared with cow dung, until a ball is formed, five or six times the diameter of the branch. This is intended as a bed into

which the young roots may shoot. Having performed this part of the operation, they immediately under the ball, divide the bark down to the wood, for nearly two-thirds of the circumference of the branch. A cocoa nut shell or small pot is then hung over the ball, with a hole in its bottom, so small that water put in it will only fall in drops; by this the rope is continually kept moist. During three succeeding weeks, nothing further is required, except to supply the vessel with water. At the expiration of that period one-third of the remaining bark is cut off, and the former incision is carried considerably deeper into the wood, as by this time it is expected that some roots have struck into the rope, and are giving their assistance in support of the branch. After a similar period the operation is repeated, and in about two months from the commencement of the process, the roots may generally be seen intersecting each other on the surface of the ball; which is a sign that they are sufficiently advanced to admit of the separation of the branch from the tree. This is best done by sawing it off at the incision; care must be taken that the rope, which by this time is nearly rotten, is not shaken off by the motion. The branch is then planted as a young tree. It appears probable that to succeed with this operation in Europe, a longer period would be necessary, vegetation being much slower in Europe than in India, where I made most of my experiments. I am, however, of opinion, from some trials which I have lately made on cherry-trees, that an additional month would be adequate to make up for the difference of climate.

The advantages to be derived from this method are, that a further growth of three or four years is sufficient, when the branches are of a considerable size, to bring them to their full bearing state, whereas even in India eight or ten years are necessary with most kinds of fruit trees, if raised from the seed.

When I was at Prince 'of Wales's Island, I had an opportunity of seeing this proved by experiment. Some orange trees had been raised by a gentleman, from seed sown in 1786, which had not borne fruit in 1796, while branches taken off in the Chinese mode in 1791, had produced two plentiful crops. Whether forest trees might be propagated in Europe, in the same manner, I have not had sufficient experience to determine.

I have observed that the roots from a branch under the process of a scission, were uniformly much longer in shooting into the rope, when the tree was in leaf, than the contrary; hence the spring season seems most proper for performing this operation.

I. T.

ARTICLE III.—DESCRIPTION OF A HOUSE FOR FORCING GRAPES
THE WHOLE YEAR.

BY MR. WILLIAM MATTHEWS.

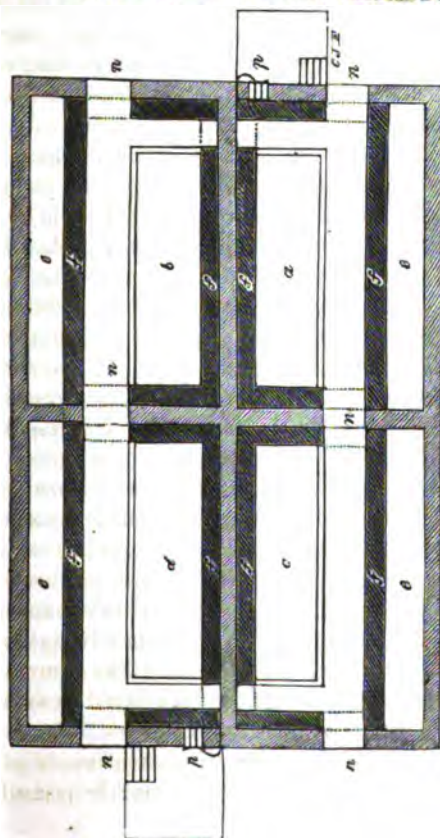
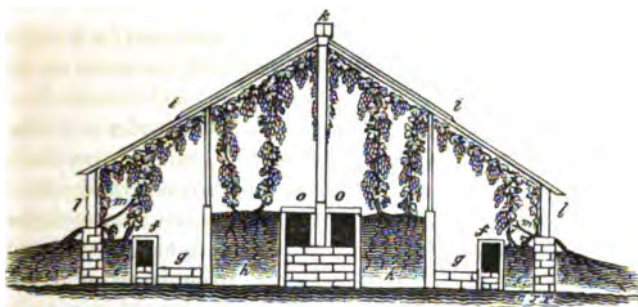
Gardener to Lady Palmer, of Wanlip Hall, Leicestershire.

THE purport of the accompanying design is the formation of a double Vinery (fig. 9) which is divided into four parts (*a b c d*) each division to be 20 feet long, 12 feet wide, and to contain six vines, which are to be planted on the front borders, and brought into the house through holes in the wall, and laid into a border (*e*) between two and three feet wide, of good compost earth, betwixt the front wall and flue (*f*) they are then to be arched over the flue and front walk (*g*) and layed into a border (*h*) five feet wide of the same sort of compost as before, and raised up to the centre, by this method a double crop can be obtained, each vine containing 24 or 25 feet of rodding, (the usual number is generally upon the old plan 12 or 13 feet) and in each compartment 144. It is to have a span roof divided by glass partitions, the one in the centre to slide, so that one or two may be worked together, the glass partition in the centre to be glazed only half the length of the house, so that when the fruit is cut, it may be slid along between the other two divisions. The centre partition may be divided into four feet sashes, for the greater convenience of sliding. A copper or tin pipe (*k*) made of light materials is fixed to the top near the centre of the roof, having small holes in it, also a ventilator at each end and centre of the house, the pipe may be from four to six inches in diameter, for the convenience of carrying off the condensed air. The sashes (*l*) in front are from 3 to 4 feet deep, hung by joints at the top, with a small iron bar at the bottom (*m*) having small holes for giving air at pleasure. The water cisterns to be fixed over the fire furnace (*p*) and a tap to draw, fixed in the wall. A small arch may be turned over the top of the parapet wall along the front, three feet in height, for holding up the soil for the centre border. Dampers to be used in the flues, one in the centre flue, and the other in the cross one, so that one or both may be worked at pleasure. The vinery to have six doors (*n*) two at each end, and two in the centre. The roof to be supported by iron columns, one under each rafter. The front walk (*g*) to be sunk for the convenience of head way, and to rise to the centre walk (*o*) with steps. The plan of this house may be adapted for forcing Peaches, with the exception of the front walk and flues. The front walk and flues should be upon arches for the convenience of admitting the roots into the front border. Two vines may be planted in each di-

vision to be brought on in succession. I make no doubt but the above plan will be found an improvement in the forcing department from the simplicity of its movements. Should any further improvements occur I shall be happy to communicate them to you.

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WM. MATHEWS.



ARTICLE IV.

REMARKS ON WOOD AND METAL AS CONDUCTORS OF HEAT.

BY EPHEBICUS HORTICULTOR.

IN reading a late number of your *Register* I observed a reply to my remarks upon Mr. Cur's criticism of Mr. Mc' Murtries communication on Metallic Hothouses. Had I considered this reply as in the least establishing the truth of his assertions, or in any manner obviating the objections brought forward, as tending to point out the fallacy of his deductions, I should not have troubled you with an answer. As he has not done so, but in fact promulgated more error, I consider myself, both for the sake of truth, and in case my silence might be understood as a virtual assent bound to make a reply; leaving it entirely to your own discretion, whether or not you may deem it worthy of insertion.

Mr. Cur assumes that I misunderstood him, and explains thus:—"What I meant was, that wood and metal are equal conductors of the heat of the sun or of our atmosphere, and not of water and sand, &c," This unquestionably is a most singular explanation, and with every reason deserves the epithet of "mere nonsense." Heat is a body which pervades all space; there is not a substance in creation which has been subjected to the scrutiny of investigation, in which heat has not been found in a combined state. In a simple or uncombined state it has never been detected, and on this account we know nothing of the properties of heat, but from its sensible effects. Heat, from whatever medium it proceeds, whether from the sun, or atmosphere, from sand or water, from fire, or from any other substance, is the same—chemically and mechanically the same. It is a substance which acts upon the ultimate particles of bodies, expanding them by increase of temperature, and contracting by diminution, &c but to assert that metal and wood are equal conductors of the heat of one substance, and not of another, is completely opposed to all philosophy. That heat and cold are considered by many as the effect of two different substances, is a truth of which we may be made daily sensible, yet, though the sensations be very different, they proceed from the same cause; for instance, if the hand be placed upon a body of a higher temperature, the sensation called heat will be felt, and

why? because the hand being the colder body receives caloric or heat from the warmer, and this receiving of heat would continue till the hand and body were of an equal temperature, and on the contrary if the hand be placed on a substance of a lower temperature, the sensation of cold will be felt, why? merely because your hand instead of receiving caloric gives it off to the body. This is the reason then of the sensations of heat and cold. Now, if the hand is put to a piece of metal and a piece of wood, both of an equal temperature, the one will feel colder than the other, and for the same reason, the metals being better conductors, have the capacity of radiating heat in much less time. From this simple fact then we may in every days experience prove the difference between metal and wood as conductors of heat.

Mr. Cur goes on by saying that he is in the habit every day of examining wood and metal rafters, and were there any difference he could not have failed to have observed it; also that his pines never have that "yellow hue" Mr. McMurtrie speaks of. These objections are all very well, and might have been credited, had there not been counter assertions from surely as high authority. What then are we to do? Are we to hang betwixt two opinions? Certainly not. Let us examine first principles and go to science, and tell if the mystery can be unravelled. And what would science teach us? Assuredly that if the object is to have heat properly and economically under control, we ought to use the worst conductors.

With regard to Mr. Curs query respecting Sabines conduct in not publishing Mr. McMurtries paper, I think it hardly deserves a calm reply, I may however remark that it is not only invidious but ill-timed. Mr. Cur seems to think I mistook his water experiment. He enlightens further: "the water was placed in two different cellars, perfectly unconnected with each other, but both of an equal temperature with the water placed in them, the metal and wood were both immersed at the same moment, and when I examined the thermometer the temperature of the one was no higher than the other." Very accurate indeed! I may ask where did he place his thermometer, was it in the centre of the pieces of wood and metal, or in the water? How did he know the metal and wood were of an equal temperature? Did he plunge the pieces over head, or half, or how? Is it possible for any person, gifted with common sense, to draw any conclusion from such a confused experiment, or what does it prove even if it be so far accurate? In one word, all that Mr. Cur has been endeavouring to prove by his experiments is to disprove a doctrine, which he, nor no other is able to overturn until the nature of things are changed.

But enough of this stuff, let us mark his conclusion. He says, "supposing, however, that metal houses, when painted, were greater conductors of caloric than wood, and the hothouses thereby raised, could not every evil be easily counteracted by admitting a little more air? How then could pines, vines, or any other plants be injured by heat arising from a metallic roof?" No doubt by this the temperature might be lowered, but every gardener knows that this requires more attention and trouble, and even at some periods would not be conducive to the health of the plants, particularly the pine. This is not all however, observe the counterpart, when the air on the outside is very cold, what is to supply the deficiency by the radiation of heat from the inside? Of necessity by applying stronger fires, which requires more attention, trouble and expence, and regularity less certain. In fire it is well known that metal houses cost double the expence of wooden ones, and to demonstration has it been proved that their duration is less. They require more attendance, trouble and expence, both in repairs and otherwise, fruits &c. Plants have been grown in wooden houses to equal at least, if not to surpass those grown in metal ones. Where lies then their superiority?

EPHEBICUS HORTICULTOR.

Nov. 16, 1832.

ARTICLE V.

OBSERVATIONS ON THE GROWTH OF ONIONS.

BY CEPA.

THE following observations on an article in your last number are submitted to your judgment for insertion in a future number by one of your subscribers.

Notwithstanding the assurance which your contributor I. T. (see Register, page 724) received from his acquaintance the Portuguese gentleman, I much question if it be possible, by any mode of culture, to grow onions in this country equal to those which are imported from Portugal. It is the opinion of one at least of our most eminent Horticulturalists, that the best of an English summer is not sufficient to forward the onion to perfect maturity; and with a view to remedy in some degree this defect of climate, Mr. Knight advises to plant out in the spring, small bulbs of the last year's growth, for the purpose of being enlarged and matured by the heat of the fol-

lowing summer. The superiority of the onions of Portugal over those grown in England must, I apprehend, be attributed to the higher temperature enjoyed by the people of that country, as much as to their system of management, which, I do not doubt, is well suited to their climate. Irrigation, it is well known, is very generally practiced in the culture of all kinds of vegetables both in Spain and Portugal, where, in consequence of the heat and dryness of the atmosphere, the practice is found to be highly beneficial if not absolutely essential. The water, I believe, is distributed over the grounds to the roots of the different plants by means of canals or trenches, but I have never understood that onions were any where always planted in *deep drills*, a mode of treatment, which, although it *may* succeed in Portugal, I am confident will never be generally adopted in this country. In a climate such as that of England, onions treated in the manner described, instead of being improved in size and flavour, would be much more likely to perish from excess of moisture, their fibrous roots being liable to *damp off*, especially in cold and wet seasons, and on a retentive subsoil. I am satisfied, however, that in the warm and dry summers with which we are sometimes favoured in this country, the growth of onions would be greatly promoted by more copious waterings than are usually supplied; but I know no method in which these can be supplied as safely and at the same time as effectually, as from the rose of a watering pot, the ground being formed into beds in the common way.

CEPA.

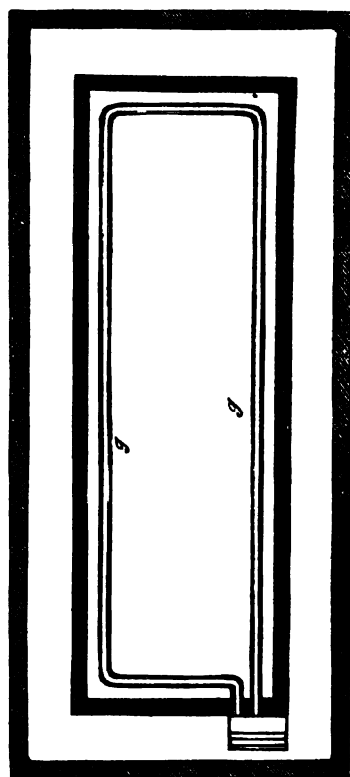
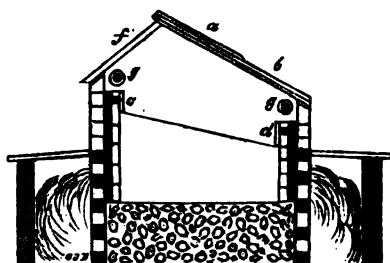
October 6th, 1832.

ARTICLE VI.

DESCRIPTION OF A PINE PIT.—BY MR. WALDRON.

THE annexed plan with the cost attending its erection, will, I think, be found worth the notice of your readers. The pit is thirty-one feet long and ten feet wide, it requires eighteen sashes, nine upper (a) and nine lower (b) each to be four feet nine inches long, made of the best red deal, top rails two inches thick, and two inches and a half wide, bottom ones one inch and a half thick and three inches wide; the bottom sashes (b) to be moveable, having small brass rollers at-

10



tached to assist their sliding. Astrickles or sash-bars three-quarters of an inch thick and one inch deep : rafters ten in number, four inches thick and seven inches deep, grooved one inch deep for the sashes to slide in ; the bottom of the rafters to be levelled off. It will be necessary to have eight ventilators, four in the back wall (c) and four in the front (d) to admit the steam of the dung from the cavity (e) amongst the plants when required ; in the back elevation are fixed nine shutters (f) three feet high, made of good three-quarters inch red deal, to be pannelled and made to slide. Round the inside of the pit is fixed a hot-water pipe (g) of four inches broad, to give a greater heat when found necessary, although it will be seldom wanted. All the bottom of the pit must be filled with stones, to about two feet six inches deep, to allow the steam of the dung to work freely ; then upon the stones, instead of laying tan, old leaf-mould may be used, filling up to the height required for plunging the pots. This system will be found to supercede the use of bark, as the heat is more safe and regular, and we may probably calculate that one half or more of the pine plants which perish, receive chief of their injury from burnt roots. When at work, keep up the heat to 90 degrees Fahr. and if there is not sufficient moisture to be obtained from the use of the ventilators, water betwixt the pots with a fine rose watering pot on the leaf-mould ; give but little air, and that always at the back shutters, and never at the front ; and if the range of the thermometer be kept from 90 to 100 degrees, and keep a sufficient corresponding moisture, very fine fruit in a short space of time, with but little trouble and expense may be expected.

JAMES WALDRON.

PROBABLE EXPENSE OF ERECTION.

	£.	s.	d.
Bricks 4464, mortar, labour, &c.....	18	4	6
Wood work, all included	19	10	0
3rds glass, 6 by 4, at 7½d. per foot, 270 feet.....	8	8	9
Putty, labour, &c.....	2	5	0
Paint.....	4	0	0
Ventilators, 8 at 1s. 6d. each.....	0	12	0

Whole cost of erection, £53 0 3

Hot-water Apparatus not included. See Vol. 1, page 682.

ARTICLE VII.

ON THE INJURY PINE PLANTS SUSTAIN BY WATER BEING
ALLOWED TO STAND IN THEIR HEARTS.

AND

ON PREPARING STRAWBERRIES FOR FORCING.

BY MR. WM. BROWN, JUN.

WATER being allowed to remain in the the hearts of Pine plants, is probably a circumstance less regarded than it ought to be; its prejudicial effects are, more or less observable to every person occupied in stoves amongst pines, especially at the early part of the year. The strongest and finest plants (whether Queens, Black Jamaica, Montserrat, or any other sorts) show fruit much sooner than the weak ones, and not unfrequently begin to form as early as January or February. Now if water be allowed to stand in the centre of the plants, the fruit are almost sure to come up deformed, and at the spring renovation the plants are only fit to throw to the rubbish heap, it not being desirable to propagate from such. If plants are allowed to stand too thick, and become drawn, they are also liable when they show early, to produce deformed fruit; they therefore require considerable care as soon as symptoms of fruiting are perceptible. To draw the water from the hearts of the plants

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I should recommend a syringe
resembling fig. 10. The sock-



et (*a*) in which the sucker (*b*) works, is 3 feet long, and has at the end a thin pipe (*c*) 10 inches long, and which goes down into the heart of the plant, and through which the water is drawn by the sucker. The St. Vincent's pine scarcely ever grows deformed, and may almost be considered superior to the Queen for a select collection.

To prepare Strawberries for forcing.—In the month of May, before the runners begin to grow, the ground on each side the plant should be forked up, and a little leaf mould added, that the runners may strike and grow more freely. When they have grown considerably it will be necessary to thin them out, to prevent their being drawn, and rendered useless. I would recommend going over them with the hand, and pegging each down to the earth; by this means they will strike root sooner, and make finer plants than when left to

nature. In one month after they have been pegged down, they may be separated from the mother plants, and planted three in each twenty-four sized pot; this should always be done in July and August, never later, by this means they have plenty of time to grow before cold weather overtakes them. The stronger the plants are, the better is the prospect of fine fruit. The best compost I have met with, is three barrowsful of maiden loam, and one barrowful of rotten stable dung, well mixed together. When potted, they should be placed in a north situation until they have made fresh roots, and are able to bear the sun; they are then to be removed to a south aspect, and plunged in a bed of old tan, up to the rim of the pots; this keeps them cool, and the soil is not exhausted by frequent watering, as is the case when exposed to the sun and air, the frost has also less power to break the pots, or stop the growth of the plants, than when exposed, and they will at least be a fortnight earlier in their growth.

WM. BROWN, JUN.

FLORICULTURE.

ARTICLE VIII.—REMARKS ON THE CAMELLIA.

BY G. A. L.

(Concluded from Vol. 1, Page 690.)

39 CAMELLIA COMPACTA, close flowering C. A pretty, neat, and distinct white flowering variety.

40 C. JAP. REEVESIANA. Reeves's C. A handsome plant from China. The flowers are of a fine crimson colour, but are inclined to sport.

41 C. JAP. CONCINNA, fine C. A fine and splendid new scarlet variety.

42 C. JAP. ROSSII, Ross's C. A fine large single variety. A seedling plant.

Having thus noticed the varieties of the Camellia japonica, and other species thought most deserving of attention, I shall conclude these papers with a recapitulatory list of them, arranged as nearly as possible, according to the colour of the flower, hoping that it may be useful to the admirers of this noble genus of the vegetable kingdom.

WHITE.

* 2	<i>Camellia japonica</i> , <i>flora plena alba</i> .
9	<i>fimbriata</i>
13	<i>anemone flora alba</i> .
20	<i>Welbankii</i> .
36	<i>Sabiniana</i>
37	<i>excelsa</i> .
38	<i>alba simplex</i> .
39	<i>compacta</i> .

WHITE GROUND,

SPOTTED OR STRIPED WITH RED.

29	<i>Camellia japonica</i> , <i>punctata</i> .
30	<i>rosa mundi</i> .
31	<i>splendida</i>
33	<i>Colvillii</i>

RED GROUND,

STRIPED WITH WHITE.

6	<i>Camellia japonica</i> , <i>variegata</i> .
12	<i>dianthiflora</i> vel. <i>Knightii</i> .
14	<i>Wiltonii</i> .
18	<i>Chandlerii</i>
21	<i>speciosa</i>
34	<i>Parksii</i>

RED.

1	<i>Camellia japonica</i>
3	<i>rubra plena</i>
5	<i>anemone flora</i>
7	<i>carnea</i>
8	<i>myrtifolia</i>
24	<i>splendens</i>
26	<i>crassinervis</i>
35	<i>rubricaulis</i>
40	<i>Reevesiana</i>
41	<i>concinna</i>
42	<i>Rossii</i>

* The numbers refer to those in the foregoing papers, page 633 and 688.

THE THUNBERGIA GRANDIFLORA.

67

BUFF OR LIGHT YELLOW.

4 *C. japonica incarnata*

CHANGEABLE COLOURED.

10 *Camellia japonica pomponia*.

LIGHTER RED.

11	<i>Camellia japonica, poeoniiflora</i>
16	<i>eximia</i>
17	<i>imbricata</i>
19	<i>rosa sinensis</i>
25	<i>rosea</i>
27	<i>Woodsii</i>
28	<i>elegans</i>

VERY LIGHT RED.

23 *Camellia sesanqua rosea*

VERY DARK RED.

15	<i>Camellia japonica corallina.</i>
32	<i>papaveracea</i>

ARTICLE IX.

CULTURE OF THE THUNBERGIA GRANDIFLORA.

BY MR. GEORGE KEAY.

Gardener to Sir John T. Stanley, Bart. Alderley Park.

I KNOW but few plants which attract general attention more than the *Thunbergia grandiflora*, when it is well managed. I will, with your permission, through the medium of your valuable *Register*, recommend to the notice of your readers, a method we practice here of cultivating that beautiful and interesting plant. I am not so vain as to suppose that our method is superior to all others, but that it is better than some I am certain, from the circumstance of my having known those who have found it a matter of difficulty to make the plant flower at all.

We generally make a point of saving one, or for fear of accident two plants through the winter. Towards the end of November we cut them down close to the pots, afterwards place them on any back shelf in the stove, or in fact any place where they can be kept dry, and free from frost. There we let them remain until the first week in March, at which period we again put them in the stove, and supply them with water. In a short time their hop looking shoots will make their appearance, and when they are sufficiently long to make cuttings, (two, three, or more joints,) we take off as many as are wanted, and pot them in light rich loam mixed with coarse sand, and place them in a cucumber, or melon frame. In a fortnight or a little longer they will be ready to pot off. One plant in a pot is sufficient. The compost in which we grow them, is a moderately strong loam to which we add a little rotten dung and leaf mould, the coarser the loam the better. It is scarcely necessary to say any thing respecting the size of the pots in which we grow them; 24's are the size which we make choice of for the first potting, and when they are filled with roots, we shift them into a large succession pine pot, in which they remain till they have done flowering. The old plants are now done with. Plants raised from cuttings every year, flower so much more freely than old plants, indeed I have kept an old plant for three years without its showing a flower at all. If you think what I have stated; will not be too great an encroachment on your valuable pages, you will oblige me by giving it publicity, and at a future period I may again venture to trouble you with further remarks respecting the management of plants, &c. As the object of your Register is the furtherance of Horticulture, a pursuit of which I am particularly fond, and by which I get my living, as a Subscriber I shall be proud to contribute as far as my humble abilities will allow.

GEORGE KEAY.

N. B. The *Thunbergia grandiflora* treated in the manner I have recommended, will commence flowering about the end of May, and continue until the end of November.

ARTICLE X.—ON BUDDING ROSES.

BY MR. JAMES BROWN, JUN.

HAVING seen the common China rose (*Rosa indica*) flowering in the greatest luxuriance most part of the year, when trained against trellis or other objects, I have often felt surprised that buds of many of

the more choice kinds were not inserted in their branches, as all who have any knowledge on the subject are aware, that as stocks, the China roses afford every chance of success.

In selecting buds, it must be remembered, that all the different varieties will not grow with equal success ; it will be necessary therefore to choose the free growing kinds, or such as seem to partake of the same habit, and require similar treatment to the common China rose. The *Rosa semperflorens*, Boursoult, Noisette, &c. seem to flower better, and grow stronger, than when supported by their own natural roots. The moss rose, Tuscany, and others of similar habits, will not flower more than two or three years at the furthest, for the shoots they are budded upon soon begin to decay, which renders it necessary to insert a succession of young buds annually, and to cut the old ones away. Some of the free growing kinds will flower the same year they are budded, these should be cut back to two or three eyes in the winter, and also the shoots they are budded upon to one eye above each bud ; those sorts which are of slower growth, will require the shoot leaving several eyes above the bud, as it is apt to die down when cut close to the bud. Budding roses on a trellis is more to be recommended, than budding the different sorts on standards. A standard rose makes an object in itself, and I think is more calculated to please without mixture on the same plant, but with regard to the trellis, it is the greatest object to have a regular succession of flowers of different colours in perfection throughout greater part of the year, on the same plant.

JAMES BROWN, JUN.

Stowe Gardens, Oct. 8, 1832.

ARTICLE XI.

ON THE NATURAL HISTORY AND CULTIVATION OF THE ERYTHRINA LAURIFOLIA.

BY F. F. ASHFORD.

ON perusing page 813 of the *Register*, I find that a Florist, wishes to be informed of a method that will encourage the *Erythrina laurifolia* (*Crista-galli* of many gardens) to flower. I am induced to send the following by which I have succeeded in cultivating and flowering this splendid Exotic to great perfection.

The *Erythrina* (from *Erythos*, red, alluding to the colour of its blossoms) *laurifolia*, or laurel-leaved Coral tree, is a native of South America, where this with other species of this beautiful genus, form some of the loftiest trees of the forest.

According to the Linnean classification of plants, it belongs to the 17th class and four Order Diadelphia Decandria. The compound word Diadelphia, is derived from the Greek words, *dis*, twice, *adelphos*, a brother or brotherhood. This class comprises all such plants as are furnished with hermaphrodite flowers, that is, containing both sexes in the same flower, having two sets or columns of united stamina, i. e. united below into different bodies, the flowers are all papilionaceous, and have apparently ten stamina, but which are in reality only two, one of which splits longitudinally, from the middle upwards, and terminates in about nine parts, appearing like so many distinct filaments, and the other stamen is simple or undivided, and lies closely along the fissure of the divided filament, which has generally as many anthera as divisions, while the simple stamen has but one, and from the number of stamens and antheræ, on both filaments, the orders are founded.

The term Decandria originates from *deca*, ten, *aner*, a man, which applies to all plants whose flowers contain Diadelphous stamina, furnished with ten anthera.

According to the Jussieuan or Natural arrangement of plants, it belongs to the Order Leguminosæ, Tribe Phaseolea under the subclass Calycifloræ. This order contains all the various kinds of pulse and is one of the most familiar to the world, and at the same time, one of the most useful to mankind.

Its characters are, Truncus, a tree-like woody stem, deciduous, armed with spines, and furnished with ternate, petiolate leaves, producing spikes of dark crimson flowers growing in threes, from the axilla of the leaves. Calyx monophyllus, tubulose, and entire. Corolla, papilionaceous, and pentapetalous. Vexillum, (standard,) spear shaped, and very long. Alæ (wings,) oval, and very short. Carina (keel,) dipetalous. Stamina, ten diadelphous filaments with saggitate, (arrow-headed) anthera. Pistillum, a pediculated, subulated germen, slender style, and simple stigma. Pericarpium, a long swelling unilocular legumen or pod. Semina, reniform or kidney shaped. The compost I use for the cultivation of the Erythrina, is a light one, composed of

One wheelbarrowfull of fresh maiden loam.

One do. of sandy peat or heath-mould,

One do. of well decomposed hot bed dung.

The soils and dung should be well incorporated together, and finely chopped, and also be well ameliorated with the frost of the preceding winter.

In the spring, say the month of May, take the plants and cut the

shoots of the last year down from two to five or six eyes, according to their strength; then pot them in the above compost, and place them in a stove, until they have taken root, and made shoots from nine to twelve inches, when they must be removed to a house, of the temperature of from 55 to 60 deg. allowing them plenty of light, or the shoots will be apt to draw and become weak.

When they have attained the height of three or four inches, they must be frequently syringed with pure water to prevent their being attacked by the red spider, (*Acarus*) this should be well attended to, as that destructive insect, will otherwise cause them to have an unsightly appearance and flower weakly.

Treat them thus till they show flower, when they must be allowed plenty of air and water, which will cause them to flower freely. When in full bloom remove them to the conservatory or greenhouse, where placed amongst other natives of foreign climes, they will add to the gaiety and grandeur of the house in the months of June and July.

After they have done flowering, repot them, cutting the young wood down as before, take them back to the stove, and treat as before recommended, when they will again flower in the months of October and November.

After they have done flowering the second time, keep them in the green-house almost in a dormant state, allowing them but little water till the following spring.

By the above method, we have a plant eight feet high, which has been in flower for the last month or five weeks; the shoots it has made since last July are nearly four feet long; and being covered with fine green trifoliate leaves and splendid crimson flowers, makes a magnificent show.

A friend informs me, that every time the plants of the *Erythrina* have done flowering, they should be taken out of the soil, and all the old roots cut away, they must then be potted in strong loam, and plunged in a bark pit. Having never tried this way, I have just given as I received it, without vouching for its efficacy.

Sweet, in his *Botanical Cultivator*, page 67 and 218, recommends this with the *E. herbacea*, to be planted in the open ground under a south wall, and covered with dry litter during winter, where, says the author, they will shoot much stronger, and flower of a richer colour than when grown in the house; but by this method the *C. laurifolia* becomes herbaceous.

F. F. ASHFORD.

ARTICLE. XII.

CULTURE OF THE MAURANDIA BARCLAYANA.

BY MANCUNIENSIS.

YOUR correspondent "J M" in the *Horticultural Register* for October last, in treating of the culture of the *Maurandia Barclayana*, has omitted to state at what time in the spring he took them out of the cold frame in which they had been wintered. This should not be done until the frosts are over, as the young shoots are very tender. I had a very fine plant in doors during last winter, and in order to get an early flowering, planted it out in April, when I supposed the frosts were over, but in a few nights the severe frosts quite spoiled it. When set out it was two feet high, and it was destroyed to the root. It sprouted again and flowered in the autumn, but it was retarded at least six or eight weeks. Cuttings struck in the autumn will flower very well in the ensuing spring, but if the plant be trained against a wall or trellis, it is better to let the old plant remain. It will flower much earlier and stronger than a young one. The root should be covered with litter during the winter, and in the spring when it begins to shoot, a bass mat should be put over to preserve it from the night frosts. If the use of a green or hot-house can be had, then the best plan is to put the cuttings in August or September into large pots, and keep them in the green-house during winter, and turn them out in the spring to flower. The *Maurandia* will grow in almost any soil or situation. The great beauty of the plant, which I think very far superior either to the *Lophospermum* or *Eccremocarpus*, will be, I hope, a sufficient excuse for my troubling your readers with the above remarks.

CHINA ASTERS AND CHRYSANTHEMUMS.—The seeds should be sown in a hot-bed in March, and when the young plants are about 1 inch high, transplant them into the borders for flowering. Four or five should be set in a cluster, and they will form an agreeable contrast with each other. The seeds should be mixed.

LUPINUS MUTABILIS.—Let me recommend this magnificent Lupine to all your numerous Subscribers. The seeds should be sown in a hot-bed and planted out. By August or September the plants will be in full flower. The frosts in autumn will destroy the stems, but the plant will shoot out again the following year. I had some very fine specimens in flower this summer, but the sharp weather in the beginning of the last month spoiled them. MANCUNIENSIS.

ARBORICULTURE.

ARTICLE XIII.

ON THE UTILITY OF PRUNING FOREST TREES.

BY T. R.

To prove the advantages arising from the system of pruning recommended so ably by many of your intelligent correspondents, I venture to send you a statement of the growth of a few trees taken by a Scotch gentleman in September last, who employed some hours in carefully examining the plantations made in the winter of 1815 and 1816, consisting of 300 acres of high mountain land, not calculated for any other purpose than the raising of timber.

Many of the trees are much higher than those I have marked, but my object is to show the rapid increase of girth by *annual gradual* pruning, which many individuals, who have never given the system a fair trial, positively deny.

<i>Species.</i>	<i>Circumference.</i>	<i>Height clear.</i>	<i>Height total.</i>
Oak	12 inches.	3 feet	17 feet.
Ash	13½ do.	9 do.	20 do.
Spanish	16 do.	10 do.	26 do.
Elm	16 do.	6 do.	16 do.
Beech	18 do.	11 do.	28 do.
Sycamore	22 do.	12 do.	32 do.
Scotch	22 do.	16 do.	30 do.
Spruce	24 do.	4 do.	30 do.
Black do.	27 do.	7 do.	25 do.
Larch	35 do.	12 do.	24 do.

Holly	68 do.	12 do.	18 do.
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This is a beautiful picturesque tree. Age unknown.

I. R.

Parish of Wold, Oct. 15th, 1832.

NATURAL HISTORY.

ARTICLE XIV.—ON THE KNOWLEDGE EVINCED BY BIRDS,
BOTH IN CAPTIVITY AND AT LIBERTY.

BY OSLAN BELEMUS WAREHAM.

"BIRDS in confinement evidently know the figure and voice of those who feed or are kind to them: wild birds also are able to distinguish betwixt individuals who are their enemies, and those who are their friends, and will gradually become familiar with the latter.*" The truth of this I have many times witnessed. When I was a boy, like most of my school-fellows, I was a great birdnester, and although I was considered pretty expert at learning, I believe the woods and hedges possessed far greater charms, than the long room of the village pedagogue. My ambition, however, differed materially from that of my companions, who coveted a long string of eggs. I sought to be possessed of nothing but the songsters themselves, and many a time have I been in danger of feeling the effects of a good elastic ash stick, for so far exceeding the bounds of prudence in that particular. But the mind of youth seldom can be entirely deterred from following a favourite pursuit, by the mere slavish fear of chastisement; under all circumstances I still proceeded, although with considerable caution; I placed my nests of young birds in flower pots, and inverted other pots over them, making all appear to a superficial observer as natural as possible. I also fed them very regularly, lest their chirping should betray me. But notwithstanding all my caution, they constantly disappeared, until many times out of half a dozen nests, not one bird remained, and more than once did a poor cat feel the weight of my vengeance, as the depredator. One day, however, I observed with no small dismay, that I laboured under an egregious mistake. From this time I selected rather a novel mode of preventing a recurrence of such circumstances: having obtained a nest of linnets pretty fledged, I hid and fed them in a flower pot for about two days, until they could readily fly, I then placed them in the trees, and accustomed them to a certain call. They soon became so well acquainted with me, that whenever I called, they would all fly across the garden, the distance of probably 100 yards, fluttering and settling upon me to be fed. This system answered so well, that my stock increased amazingly, so that it be-

* Slaney's Outlines on the Smaller British Birds.

came necessary in my going about the garden to constantly carry a supply of food with me, I therefore procured a large pill box, and filling it with scalded rape seed and bread, carried it regularly in my pocket. These birds shortly knew me so well, that whether I called or not, they would fly down and follow me until I fed them, they then returned to the trees till their appetites reminded them of the contents of the pill box, they continued thus familiar until matured, and I suppose, mingled in September with the general flocks. When a flock of goldfinches or linnets were passing over my head, or near me, I generally called in my usual way, and often one, or two, or more, would separate from the flock, and alight in a tree or shrub, perhaps within a yard or two of me; but I never remember an instance when these would allow me to touch them, although I have tried many times, by moving very gently, at the same time holding out my hand with food, and using my call, however, they always kept sufficiently out of my reach, either moving to another twig or flying to another tree. After September I seldom saw any goldfinches, I could suppose to be of my rearing, linnets I have occasionally met with in winter. I think, however, those which escaped the net of the bird-catcher, probably returned to that neighbourhood to breed, as it abounded with goldfinches and linnets; but I could observe no greater familiarity or boldness, than what might arise from their affection to their young, and which appeared equally strong in other birds, nor did my call seem to be at all noticed.

Of all birds when reared by the hand, I have found none to surpass in familiarity, the greenfinch; (*Fringilla chloris*) its affection for its owner appears very great; I repeatedly allowed one I possessed to have his full liberty in the garden, and if his cage was set out of doors too, he appeared to enjoy his liberty much, but if he lost sight of his cage, he appeared sadly troubled, he always seemed very happy when I noticed him; when weary, he would resort to his cage, enter in, and feed as composed as though he had never been absent from it. I think too, something of the same knowledge and affection is possessed by bullfinches; in that very severe winter 1813--14, I caught a great number of starving birds, and amongst them several bullfinches, these I caged and fed, intending at the return of fine weather to give them their liberty.

I think it was about the beginning of April I began to release my captives, I could not resist the temptation of selecting a few of the most beautiful for perpetual prisoners, the rest I set at liberty. Several of the bullfinches seemed to leave me rather unwillingly, they hung about the door, and seemed loth to leave it. One handsome

male, in particular, appeared much to regret being turned out of his winter quarters; he uttered such a very plaintive cry, and seemed so uneasy, that I could only account for it from the supposition that he was attracted by the call of one still in confinement; however, after several hours had elapsed, finding him still hovering about, I set out an empty cage, and sprinkled a few seeds in it; when he saw the cage, he almost immediately entered it, and commenced eating in "right earnest," and when I advanced towards him, he very deliberately hopped upon the perch, apparently well pleased, I kept him till (I think) about June, when he contrived to liberate himself, and leave the room without my permission. In August 1817, to the best of my recollection, I found a bullfinch's nest with four or five eggs within a few days of hatching, these I placed in a canary's nest, whose eggs were addled; they were hatched in a few days, and two males were reared. One of these I left constantly in the same cage with the canaries, being anxious to see whether he would learn the canary's call, and song, or his own natural notes; he appeared to know nothing of the latter, and the former he only partially acquired, and added a numerous catalogue of other notes, which I suppose he had gathered from various quarters, and by blending all together, he made out a curious song, with an exceeding many twistings and turnings in it. The other bird I removed as much as possible out of the company, and hearing of all other birds, intending to teach him one or two favourite airs, but either the master, or the scholar, or both, were dunces; for after nine months earnest application at whistling to him, he appeared nearly as little calculated to join in the melody (if melody it may be called) as at first: there was one or two acquirements, however, I must give him credit for:—he very were tame and familiar, and appeared much delighted when noticed by company; I had accustomed myself to call some fancy pigeons, by a peculiar whistle into the room to be fed; this whistle he learnt to a nicety, and as he was fond of company, whenever I was absent and left open the window, which I repeatedly did, he would call the whole stock of pigeons into the room, and cry pitiously if they again attempted to leave it: he had his own natural wild notes, although I am not aware, he ever heard any of his own species, except amongst the general chorus in the woods. In the following spring, that, in company with the canaries, paired with a female canary, although there were male canaries in the same cage: I then removed the couple into a large breeding cage, where they soon commenced building a nest, and a more affectionate pair I never saw, he serenaded his mate with his curious song, fed her on the nest with the greatest at-

tion and tenderness, and often enticed her off the nest for exercise and immediately took her seat on the eggs until her return: the eggs, however, were not fertile either in this or any subsequent nest they had. During the following winter, I turned them into a room, in company with a number of male and female canaries, female bullfinches, and other birds, yet in the following spring, the same birds paired again, or rather renewed their former covenant; I had, however, no better success than in the preceding year, all the eggs being addled; and the year following, breaking up my breeding establishment, in consequence of leaving that neighbourhood, I had not the opportunity of trying them further, nor have I since been able to resume my experiments. The other bullfinch making no proficiency in music, I put a fine female canary into his cage, but although the season was very far advanced, he yet possessed so little gallantry, that, without any ceremony, he turned round, seized his mate by the throat, cast her on her back, and had I not come to her rescue, would doubtless, have been (instead of her lover) her actual murderer. I turned other female canaries to him, but with no better result, even a female bullfinch, but he rejected all.

O. B. WAREHAM.

ARTICLE XV.

THE STUDY OF THE SCIENCE OF BOTANY.

BY F. F. ASHFORD.

(Continued from Volume II, Page 25.)

VEGETABLES are each primarily divisible into,

- 1 The Root.
- 2 The Herb or Plant itself.
- 3 The Fructification.

1 Radix, the root, is the lowermost part of a vegetable, situated within the ground; destined to draw nourishment from the soil for the production and support of all the other parts of the plant, it consists of two parts, viz.

Candex, the stock or body of the root which both ascends and descends. The

Ascending—raises itself above ground, serving often as a trunk, and produces the herb or plant. The

Descending—strikes gradually downwards into the ground and puts forth radicles or fibres.

Radicula, radicle or little root, is a small fibrous part, issuing first either immediately from the seed or that which terminates the stock, or main root, penetrates into the soil, and draws nourishment, for the production and support of the plant, and is the principal or essential part of every root of vegetables.

2. The Herb, or plant itself, is a part of the vegetable arising from the root, it consists of

Truncus, the trunk, that part which serves to multiply the herb, leading immediately from the root. It is of seven kinds, viz.

Caulis, a stem, the proper trunk of the herb, which serves to elevate the leaves, and the fructification. It is either

Simple—when it proceeds in a continual series towards the summits, which may be, either

Integri, entire, or Ramosa, branchy.

Compound—when it is subdivided into (ramuli) small branches, which diminish as they ascend, these are

Dichotomus, forked, when the divisions are always in two parts.

Subdivided, when they are divided into branches, irregularly and without order. Or

Articulate, jointed, when they are distinguished from space to space by knots or joints, as in Piper.

Culmus, a straw, is the proper trunk or stem of a grass, and serves to elevate and support both the leaves and the fructification, it is either

Enodis, without knots, when it is continuous, and not intercepted by joints ;

Articulate, jointed, when it is connected by various joints, or

Squamose, scaly, when it is covered with imbricate scales.

Scapus, a stalk, is a universal trunk elevating the fructification, but not the leaves.

Pedunculus, a peduncle, or footstalk of a flower, is a partial trunk, raising the fructification but not the leaves.

Pedicellis, is a partial flower-stalk.

Petiolus, a petiole or foot-stalk of a leaf, is a species of trunk, which elevates the leaves but not the fructification.

Petiolulus is a partial foot-stalk of a leaf.

Frons is a species of trunk composed of a branch and a leaf, blended together, and is frequently united with the fructification, and

belongs properly to the palms and ferns.

Stipes, a term used to express the base or trunk of a frons.

Foliae, leaves, vital organs of the plant, whose office is to transpire and attract air, like the lungs of animals, and to afford shade, they are to be considered in three respects, viz,

Simple, when there is only a single leaf on a petiole. Leaves differ in respect to

Circumscription, the form of their circumference, when there are no angles or sinuations.

Angles, the prominent part of an horizontal leaf.

Sinus, a hollow, is a term used to express the openings or cavities in leaves.

Apices, the apex or tip, the extremity, or termination.

Margin is the outermost boundary of the sides of a leaf exclusive of its disk.

Substance of a leaf respects the conditions of its sides.

Superfices, surface, is the outside or what covers the disk of the leaf, and respects both the supine disk or face of the leaf, and prone disk or back of it.*

Compound.—A leaf is said to be compound when there are more than one on a petiole, they are to be considered in respect to

Structure.—By the structure of a compound leaf is to be understood the insertion of the folioles, or lesser leaves, of which it is compounded.

Degree.—This term respects the subdivisions of the common petiole.

Determinate.—By the determination of leaves is to be understood their character, expressed from some circumstance foreign to their own particular structure or configuration as from

Their Place	Their Insertion
Their Situation	Their Direction

Fulcræ, props, which serve as stays to strengthen the plants, but may be taken off without destroying the plants. These have been described before.

Hybernacula, winterings, each of which is a compendium of the herb upon the root before it begins to grow. These are the bulbs and buds described before.

* **Supine** is what lies on its back or face upwards, and **Prone** the contrary. These terms are therefore well applied to the upper and under disk or face of a leaf.

F. F. ASHFORD.

COLLECTIONS AND RECOLLECTIONS.

ARTICLE XVI.

CULTURE OF ERYTHRINA CRISTA GALLI.—As soon as the plants have done growing, which will be by the latter end of August, cut them down, and set them in a cool green-house, keep them quite dry till about the end of November, then pot in fresh loam, mixed with a third of sandy peat, and a sixth of road grit, the size of the pot must be according to the size of the plant. I never find that they require a larger sized pot than a 16; water and set them in a house where the heat is about 60 degrees. I have always had them flower in perfection with this treatment in March, and if cut down as soon as they have done flowering, they will flower a second time in July; and young plants struck in the autumn, flowering the following spring, when not more than a foot high. S. A.

ON THE CULTURE OF THE POLYANTHES TUBEROSA.—This is a bulbous rooted plant, with light green linear leaves, four or five feet high, terminating in a spike of white or yellow flowers of great fragrance. It is a frame or greenhouse plant, but will thrive and flower well in the open air. The tubers are annually imported from Italy, and the warm parts of America, but R. A. Salisbury has proved, they they can be produced in our own country equally fit for flowering. Roots of the white variety may be obtained of the Nurserymen at about four shillings per dozen. There are two species and one variety cultivated, viz.—*P. tuberosa*, with single white flowers introduced from the East Indies, in 1629. *P. tuberosa flore plena*, a double variety of the above, introduced shortly afterwards. *P. gracilis*, a pale yellow flowering species, introduced from Brazil in 1822; this is the most tender and valuable kind in cultivation. Plant the tubers in rich loam, in number 24 sized pots about the beginning of March, and plunge them in a hot-bed or pine pit; shift them into larger pots as their roots grow, until you have eventually placed them in number 12's, in which size they should be allowed to flower. But if they are wanted to flower in the open air, keep them in number 24's until the flower stalks appear, then plant them out without disturbing their balls, and place a bell or hand glass over them, and by this method they may be made to grow six or eight feet high and flower very beautifully. T. K. S.

PART II.

EXTRACTS.

FLORICULTURAL INTELLIGENCE.

NEW AND RARE PLANTS, figured in the Botanical Periodicals for February.

CLASS I.—DICOTYLEDONOUS PLANTS OR EXOGENES.

ORDER SOLANÆÆ.

SOLA'NDRA GUTT'ATA.—Spotted-flowered Solandra. A very splendid stove shrub. Flowers fragrant, large, pale yellow or buff colour, have a great resemblance to those of the *Brugmansia (Datura) arborea*, to which the plant is nearly related. There is this difference, however, the flowers of the *Datura* are pendulous; those of the *Solandra* appear nearly erect. Native of Mexico, from whence it was introduced by Mr. Tate of the Sloane Street Nursery. Culture.—It appears to be fond of warmth and moisture, grows luxuriantly, is readily increased by cuttings, and promises to produce its blossoms more freely than the other species.—*Bot. Reg.*

SCITAMINÆÆ.

ALP'INIA ? MAGN'IFICA.—Magnificent Alpinea. A splendid stove shrub. Flowers deep purplish red, the scape rises up from the leaf stem, which is ten or twelve feet high, and five inches in girth at the bottom. Native of the Mauritius, whence it was introduced by the late Mr. Barclay, through the instrumentality of Mr. Telfair. Culture.—It requires a strong heat, grows in sandy peat, and may be propagated by the roots.—*Bot. Mag.*

ARISTOLOCHIÆÆ.

ARISTOLO'CHIA CYMBI'FERA.—Boat-flowered Birthwort. A remarkable stove plant, with large light yellow flowers, intersected with purple veins and spots. Native of the neighbourhood of Rio Janeiro. Culture.—It requires a brisk heat and if planted in rich mould, will grow vigorously, and produce plenty of flowers. It strikes readily from cuttings.—*Bot. Reg.*

OXALIDÆÆ.

OXALIS CUMMINGII.—Cummings Oxalis. Flowers yellow. Native of Chile, whence it was brought by Mr. Cumming. Culture.—It is a hardy annual, and will grow freely in light sandy soil, and may be propagated by seeds.

SCROPHULARINÆÆ.

MIMULUS VARIEGATUS.—Variegated monkey-flower. This is a very pretty species, its flowers are purple and yellow. Native of Chile, lately introduced into France, whence Messrs. Loddiges received it by the kindness of M. Mirbel of the Jardin du Roi, at Paris. Culture.—It thrives best if the pot be placed in a pan of water; it appears to bear seeds freely, and being probably not long lived, it is requisite to renew it frequently. The soil should be light loam.—*Lod. Bot. Cab.*

CAMPANULACEÆ.

LOB'ELIA SPECIOSA.—Low's Purple Lobelia. An hybrid, said to have been detected in a border composed of *L. fulgens* and *cœrulea* in a garden in Ireland. Flowers rich purple. Culture.—It is equally hardy with the *L. fulgens*, and like the other North American species, it delights in a soil composed of two parts of vegetable earth, one of loam and one of river sand.—*Sweet's Fl. Gard.*

LEGUMINOSÆ.

TRIFOLIUM UNIFLORUM.—One flowered Trefoil. Flowers red and white. Native of Italy, Greece, and the neighbouring counties. Culture.—It is herbaceous, and appears tolerably hardy, and may be increased by seeds and separating the roots.—*Lod. Bot. Cab.*

ERICÆ.

ANDROMEDA JAMAICENSIS.—Jamaica Andromeda. Flowers white, exceedingly delicate, growing in small bunches near the ends of the shoots. Native of Jamaica, and found on the summits of the mountains. Culture.—It succeeds pretty well in the greenhouse, and should be potted in peat earth.—*Lod. Bot. Cab.*

CARYOPHYLLÆ.

DIA'NTHUS LIBANOTIS.—The Pink of Lebanon. Flowers white, spotted with rich purple, and beautifully fringed. Native of the highest parts of Mount Lebanon, where it was discovered by Labillardière a French Botanist. Culture.—It will thrive in the open air in a dry warm situation, and may be increased by layers and pipings.—*Bot. Reg.*

CACTEÆ.

CEREUS SETOSUS.—Flowers pink and white. Native of Brazil; received in 1829 from Rio Janeiro by Messrs. Loddigea. It has a trailing stem, rooting as it goes, for two or three feet in length. Culture.—It requires the heat of the stove, and increases without difficulty by cuttings. The soil should be light loam, with but little water during the winter season. *Lod. Bot. Cab.*

CLASS II.—MONOCOTYLEDONOUS PLANTS OR ENDOGENES.

ASPHODELEÆ.

PH'ARIUM FISTULOSUM.—Hollow-leaved Pharium. Flowers, rosy purple. Native of Mexico, introduced by Mr. Tate, of the Sloane Street Nursery, Chelsea.—*Bot. Reg.* Culture.—It will probably be found nearly hardy, and will thrive in sandy loam.

AMARYLLIDÆ.

ALSTRÖMERIA PSITTACINA.—Parrot Alströmeria. Flowers bright red, spotted with velvety brown, and edged with green, very handsome. Said to be a native of Mexico, but supposed by Mr. Lindley to be Brazilian or Chilian. Culture.—Within a brick pit, from which the frost is excluded in winter, planted in rich light loam, and exposed freely to light and air, it grows with the greatest luxuriance. See Vol. I. p. 734. It is increased by offsets and seeds, which it ripens freely.

IRIDEÆ.

SISYRINCHIUM MACULATUM.—Spotted flowered Sisyrinchium. Flowers yellow and blood red. Native of Chili, where it was discovered by A. Cruckshanks, Esq. and by him introduced to the Glasgow Botanic Garden. It requires the shelter of the greenhouse, grows in loam and peat, and is propagated by dividing the roots.—*Bot. Mag.*

SMILACEÆ.

OPHIPOGON JABURAN. (*Slateria Jaburan.*) Flowers a delicate white. Native of Japan. Introduced by Messrs. Loddiges from the Leyden Botanic Garden in 1830. Culture.—It will thrive very well in the greenhouse, and perhaps even out of doors; the leaves are of a strong consistence, and remain all the year. It may be increased by separating the roots, the soil should be loam and peat.—*Lod. Bot. Cab.*

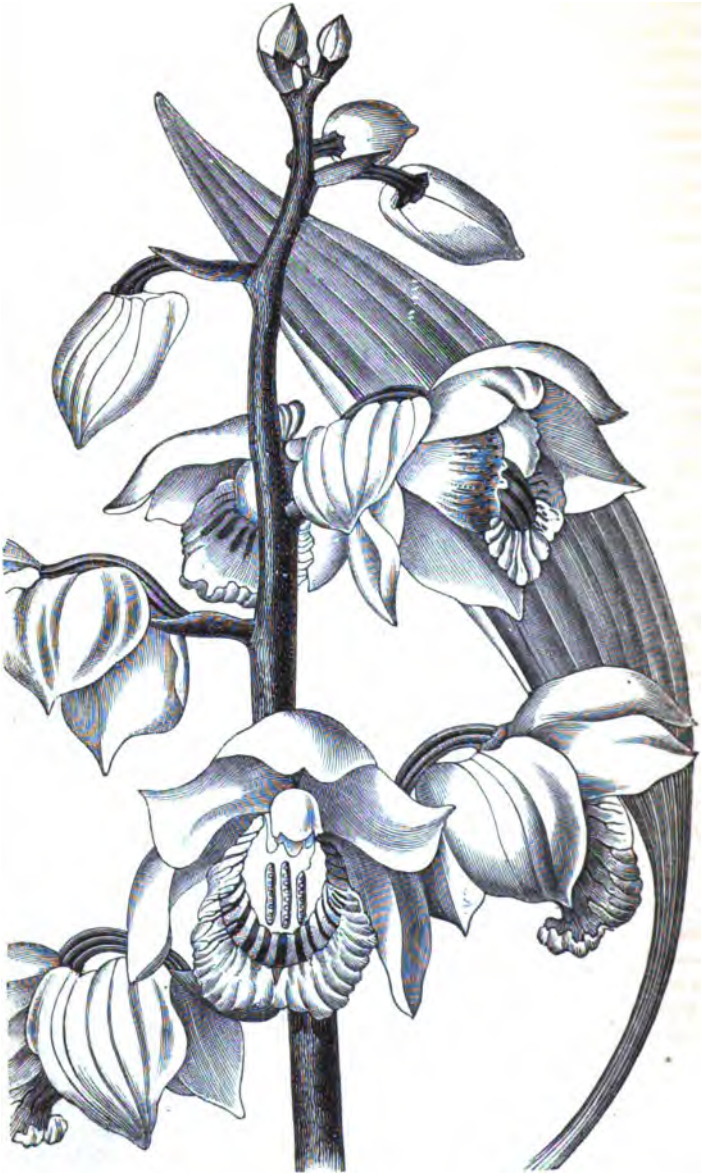
CANNÆÆ.

CALATHEA ORBICULATA. Flowers yellow. Probably a native of the West Indies. Introduced in 1830 from the Leyden Garden. Culture.—It requires the constant temperature of the stove, should be potted in peat and loam, and may be increased by dividing the roots.—*Lod. Bot. Cab.*

ORCHIDÆÆ.

MAXILLARIA WARREANA.—Warres Maxillaria. (Fig. 11.) A rich and splendid species of this beautiful genus; the flowers are white, blue, brown, and crimson. Native of Brazil, where it was collected by F. Warre, Esq. who sent it together with many others, to Messrs. Loddiges in 1829. It grows full two feet high, and must be preserved in the stove, potted in vegetable earth with a little sand. It may be slowly increased by an occasional offset from the roots.

Affinities.—The genus *Maxillaria*, was formerly included in *Dendrobium*, but after an accurate investigation of the genus, Mr. Brown divided it into several genera. This took the name of *Maxillaria*, in consequence of the *labellum* or front segment of the flower, resembling, when seen sideways, the *maxilla* or under jaws of some insects. It belongs to the *Orchis* tribe or order of plants named *Orchideæ*. "If the sexual apparatus of an *Orchideous* plant is examined, it will be found to consist of a fleshy body, stationed opposite the *labellum*, bearing a solitary anther at its apex, and having in front a viscid cavity, upon the upper edge of which there is often a slight callosity. This cavity is the stigma, and this callosity is the part through which the fertilizing matter of the pollen passes into the tissue communicating with the *Ovules* or young seeds. They are remarkable for the bizarre figure of the multiform flower, which sometimes represents an insect, sometimes a helmet with the visor up, and sometimes a grinning monkey; so various are these forms, so numerous the colours, and so complicated the combinations, that there is scarcely a common reptile, or insect, to which some of them have not been likened. They all consist of three outer pieces, belonging to the calyx, and three inner belonging to the corolla, and all departures from this number depend upon the cohesion of contiguous parts, with the exception of *Monomeria*, in which the lateral petals are entirely abortive. Sometimes two sepals cohere in one, sometimes the lateral petals are connate (joined together) with the column, which then appears with two wings. In nearly the whole order, the odd petal called the *labellum*, arises from the base of the column, and is opposite it. Such is a small part of the singularities of *Orchideous* plants, enumerated by Mr. Lindley in his "*Introduction to the Natural System*," upon those, the distinctions of their tribes and genera are naturally founded. Whoever studies them, must bear in mind, that their fructification is always reducible to three sepals, three petals, a column, consisting of three stamens grown firmly to one another, and to a single style and stigma; and with this in view, he will have no difficulty in understanding the organization of even the most anomalous *Cape* species.



Geography.—The genera of this order are found in almost all parts of the world, except the verge of the frozen zone, and in climes remarkable for dryness. In Europe, Asia, and North America, they are found growing every where, in groves, in marshes, and in meadows; in the driest parts of Africa, they are either rare or unknown; at the Cape of Good Hope, they abound in similar situations as in Europe; but in hot damp parts of the West and East Indies, in Madagascar, and the neighbouring islands, in the damp and humid forests of Brazil, and on the lower mountains of Nepal, they flourish in the greatest variety and profusion, no longer seeking their nutriment from the soil, but clinging to the trunks and limbs of trees, to stones and bare rocks, where they vegetate among ferns and other shade-loving plants, in countless thousands.

Properties.—Orchideæ, beyond their beauty, can scarcely be said to be of known utility, with a few exceptions. The nutritive substance called salop is prepared from the subterraneous succulent roots of *Orchis mascula* and others: it consists almost entirely of a chemical principle called Bassorin. (See Vol. 1. p. 811.) The root of *Bletia verecunda* is said to be Stomachic. Some of the South America species as *Catasetum Cyrtopodiums*, &c. contain a viscid juice, which being inspissated by boiling, becomes a kind of vegetable glue, used for economical purposes in Brazil. And the Aromatic substance called Vanilla is the succulent fruit of a climbing West India plant of the same name.

MAXILLARIA ATROPURPUREA.—Dark-purple Maxillaria. The beauty of this flower, and its singularity in form and colour, render it a most valuable addition to the number of Orchideous plants, to which if we enter its delicious fragrance, there will be few more desirable. It was introduced from Brazil through the means of F. Warre, Esq. who discovered it at some distance from Rio Janeiro. Culture.—It requires the stove, and seems to flourish when potted in a mixture of saw-dust, leaf mould, and peat; like most of the species, it will sometimes admit of increase by separating the roots.—*Lod. Bot. Cab.*

MAXILLARIA DECOLOR.—Pale yellow Maxillaria. A native of Jamaica, whence it was lately introduced.—*Bot. Reg.* Culture.—It grows best in a damp stove, potted in peat and rotten wood, and may be increased by division of the roots.

ONCIDIUM CORNIGERUM.—Horned Oncidium. A pretty species. Flowers yellow, spotted with brown. Native of Brazil. Introduced by the Rev. W. Herbert. Culture.—It should be kept in a damp stove, potted in peat and rotten wood, and may be propagated by division of the roots.

NANODES DISCOLOR.—Purple Nanodes. A very curious Epiphyte possessing a habit entirely its own. Its flowers are a dull purple, and are so like the leaves from among which they spring, and by which they are embossed, that it can scarcely be discovered to be in flower, when every branch is blossoming. It is a native of Rio Janeiro. Culture.—We presume its culture should be the same as that applied to the more delicate plants of the same tribe, namely, plenty of heat and atmospheric moisture, with no watering upon the soil and stem. It is a very shy growing plant, and appears difficult to increase.

RURAL AFFAIRS.

EXPERIMENTS FOR ASCERTAINING WHAT SORT OF WOOD WILL REMAIN LONGEST WITHOUT ROTTING.—M. Hartwig found that stakes of firs, oaks, and Robinia Pseud-Acacia, were, after being five years in the ground, not the least altered; while, after two years, almost all others, as *Tilia* (Lime wood) *Betula alba*, (White birch), *Carpinus* (Hornbeam) *Acer* (Maple) &c. were more or less rotten. *Salix*, *Juglans*, *Fagus*, *Castanea*, and *Platanus*, lasted four years. He also observed, that those stakes which had their bark left on, or were, as usual, oiled or tarred, did not keep any longer than those without either bark or preparation; but that those which were burned a little way above and below the ground stood well, particularly when tarred. This being the cheapest method, it will be more in use than the following, which, however, is the best way for preserving wood. It must first be painted with oil colour, and, after it is dry, a sheet of iron, about sixteen inches long, must be put round it, so as to be as much in the ground as above it, and then the whole should be painted again. Stakes or posts in this manner, will remain perfectly sound for a long time.—*Pruss. Gard. Soc.*

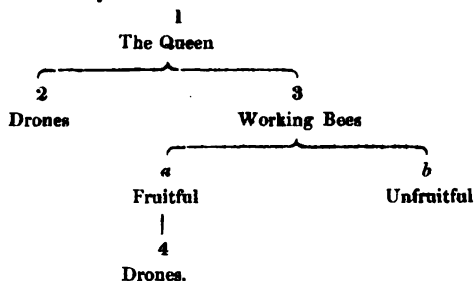
PREPARATION OF CHLORATE OF POTASH.—M. Liebig proposes the following process, for obtaining chlorate of potash. Heat chloride of lime till it ceases to destroy vegetable colours. In this case a mixture of chloride of calcium and chlorate of potash is obtained. This is to be dissolved in hot water, and to the solution, concentrated by evaporation, chloride of potassium is to be added, and then suffered to cool. After cooling, a quantity of crystals of chlorate of potash is obtained, which are to be re-dissolved and crystallized again to purify them. M. Liebig considers, that this will be a cheap process for obtaining chlorate of potash. From twelve ounces of chloride of lime, of so bad a quality, that it left 65 per cent. of insoluble matter, he obtained an ounce of chlorate of potash. The only difficulty to overcome in this process is, that the chloride of lime is not so easily decomposed by heat as is generally supposed: a solution of it may be kept boiling for an hour without losing its bleaching power. The best method is to form a thin paste with chloride of lime and water, and then to evaporate it to dryness; if it be required to prepare it by passing chloride into cream of lime, it is advantageous to keep it very hot. The chlorate of potash, which separates from the solution by crystallization, has not the form of scales, which it usually possesses, but is prismatic; whether this is occasioned by some admixture, has not been ascertained; but on recrystallizing, it is obtained in the usual form. The solution ought to be more than suffered to cool in order to procure crystals, for the crystallization is far from being terminated even after complete cooling; crystals continue to be deposited for three or four days.—*Ann. de Ch. et de Phys.*

NATURAL HISTORY.

POWER OF THE COMMON BEE TO GENERATE A QUEEN.—In one of the earliest epochs of the apiarian science, a considerable degree of importance was attached to the formation of artificial swarms; and this plan originated in the well known fact of several Queens being bred in the same hive during one season, whilst on

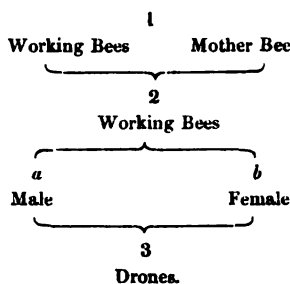
the other hand, a hive seldom throws off more than two swarms, consequently this surplus of Queens must by some means be destroyed by the bees. It was therefore suggested to take the supernumary queens from the hive, and by giving to each a proportionate number of subjects, a corresponding number of artificial hives might be formed, which under auspicious circumstances, would obtain sufficient strength and food for winter. Another method was subsequently adopted, which consisted in extracting from a prolific hive a certain portion of comb filled with eggs and larvæ; and having fastened it in another hive, then to introduce a number of common bees, who proceeded in the regular way to nourish the brood and to create for themselves a Queen. This plan soon fell into desuetude, from the extreme rarity of its success, and the positively injurious effects which it produced on the parent hive, by the frequent drains of its population. Schirach, was a strenuous advocate for this presumed power of the common bee, and he says that it is merely necessary that an egg should be in the comb, as the bees themselves possess the astonishing power of converting it, by a process known only to themselves, into a Queen Bee. Bonner was originally one of the staunchest adherents of Schirach; but the result of his experiments by no means established satisfactorily to himself the validity of the hypothesis.

Schirach's system was as follows: That the hive consists of three kinds of bees. First, the Queen; second, the Drones, being the males; and thirdly a middle sex, the Working bees, which possess a greater affinity to the female than the male sex; which, however, are destitute of any procreating power, nor do they possess any influence in the multiplication of their species. It was a part of his system, that in the liquid nature of an egg, the parts which belonged to the Queen Bee lay concealed in imperceptible minuteness; but that as soon as they received the necessary space for their expansion, an increase took place in their size, and the developement of the parts gradually proceeded, until the Queen finally attained her full magnitude and beauty; for he affirmed that every egg that would produce a working bee, if it remained in the small cell till its maturity, and was nourished in the usual manner, a queen would always arise, if the bees gave to such an egg an enlargement of the cell, in which the worm and the nymph could properly extend themselves; providing such worm or nymph was provided with richer food, and in greater profusion. Finally, he declared the working bees to be all virgins, devoted to perpetual chastity. The following, therefore, may be taken as his system:—



This system, however, met with very great opposition, for the very circumstance of the alleged existence of a fruitful common bee never procreating, nor producing any of its species, threw the whole system into dispute, and at once

established its falsity. Some of the opponents extended their dissent so far as to assert that all the working bees possessed the power of procreation, and made their appeal to the alleged fact, that hives destitute of their queen will continue the process of breeding, and even produce a brood of drones. It was however, a part of the theory of Schirach that the drones originated from some false and corrupted eggs, or, in other words, that they were actual abortions. Harold was one of the greatest opponents of Schirach, and he disseminated the following system :



According to this system Harold maintained that the Queen, as the mother bee, copulated with the males, which she sought for amongst the common bees ; and, from the eggs which the queen laid, proceeded male and females bees. The latter operated on the materials, which the males brought into their hive ; they built the cells, took care of the brood, and closed the cells when full of honey ; in fact they were the housewives of the hive. If these female eggs were deposited in the larger cells, then the issue was the large mother or queens. The female working bees copulated with the males, and the produce then was nothing but drones : these he considered as a kind of abortion, and of no sex whatever. The latter hypothesis was, however, proved to be false, by anatomical examination of the insect ; and therefore the republic of bees was changed by some individuals into a kind of Amazonian state, in which the drones, which had hitherto been considered as devoid of sex, were admitted to the rank of males or husbands. This theory found many adherents, but it was soon exploded to make room for another, by Heinmetz, which on account of its ingenuity, was adopted by many, as it seemed to clear away several of those obscurities, in which the natural history of the bee, had been hitherto enveloped. He accordingly established a double genealogical tree of the bee family.

1 The Queen, or the great mother bee, who copulates with the male working bees as her lawful husbands, and then she lays

First, *Male Eggs*, from which originate insects similar to their sires. If these eggs be laid in large cells, the issue will be great male bees, if the rudiments, the germ, and the capacity to a great male bee, be existing in the egg. But, however, as only small male working bees are the issue, although they may be bred in large cells, the conclusion must be drawn, that in these male eggs the germ was only existing for small working bees of the male sex, and that from them no great male working bees were produced.

Secondly, *Female Eggs*.—The issue of these eggs resembles the mothers : and if they be laid in cells agreeably to their nature, and are there bred and brought forth, it then follows that the issue are great mother bees or queens. If, however,

these eggs be laid in cells not according to their nature, then the issue will be small female bees, and these are the mothers of the drones.

According to this genealogy, the working bees are partly male and partly female, and are indebted to the queen for their existence. On the other hand, the drones are begotten by the mother drones, according to the following genealogical scale :

The mother drones copulate with the male drones, and lay no other eggs than the drone eggs. Those drone eggs remain, first; either from want of a sufficient number of great cells, or from a hidden natural instinct, or from a wise and established view of the creator, in small and contracted cells; and are consequently unable so fully to develop themselves as their original disposition required. They must, however, as the germ to a great drone bee is once inherent in the egg, obtain in the progress of their growth, some enlargement of their contracted cells, and consequently must come forth as natural drones like their fathers, who were bred in the great regular cells of the drones. Or secondly, they are bred in the regular drone cells appropriate to their nature, and their original dispositions, and therefore issue the great drone bees, which must be considered as genuine males, according to the result of anatomical experience.—R. Huish, Esq.—*Mag. Nat. Hist.*

(To be Continued.)

PART III.

MISCELLANEOUS INTELLIGENCE.

I.—QUERIES AND ANSWERS.

IMITATION OF SOILS.—In the directions for cultivating certain flowers, particular kinds of soil are recommended. As many Amateur gardeners have not the easy means of obtaining the various sorts stated. A short essay explaining what is the best way of imitating with common materials, so as to obtain a chance of partial success, would be very useful. C. C. C. C.

PEACH TREES GROWN FROM STONES BEARING GOOD FRUIT.—Will some of your scientific correspondents inform me, if the fact which is previously stated, p. 28, be not of unusual occurrence; or if common, whether it be not a readier mode of rearing fine healthy trees than the usual manner. G. S. SOMERSET.

CULTURE OF THE APPLE OR PEAR FROM SEED.—Will you or any of your correspondents have the goodness to give, through the columns of the *Register*, a detailed account of the Culture of the Apple and Pear from Seed, including the process of cross fertilization, choice of blossom, &c. whether the seed should be sown in Autumn, or remain in the fruit till Spring: also the best subsequent treatment, to make them bear fruit in the least possible time. There may be works on the subject, but if the particulars were more generally known, I make no doubt many would try their hands, from which it is possible some excellent varieties might result. N. S.

PRESERVING WALNUTS.—I shall feel obliged by your informing me, through the medium of the *Register*, the best method of preserving Walnuts in perfection.

W. M.

PROMISED PAPER ON VEGETABLE PHYSIOLOGY.—I beg leave to ask Quercus, when we may expect his paper on Vegetable Physiology, to appear in the *Register*. Also, when Mr. Murphy intends to continue his observations on plants, which entrap insects. Also, would the Conductors give me the promised information respecting the *Pasiflora*?

F. F. ASHFORD.

ON TAKING IMPRESSIONS OF LEAVES ON PAPER, &c.—A short time ago, I saw the impression of some leaves on paper; it appeared to me the colour was laid upon the leaf, and then pressed upon the paper, as the veins of the leaf were so distinct. Pray, can you or any of your correspondents inform how it is performed? What is the best book to assist a young beginner in learning to draw plans of gardens, fruit and flowers?

Hackney.

H. C.

MANCHESTER GIGANTIC CELERY.—I shall feel obliged, if you will inform me of the name of the Large Red Celery, mentioned in one of the early numbers of the *Register*. Also, where I can obtain the seed in London.

W. G.

The name of the sort our correspondent enquires about, is the Manchester Gigantic. Whether it can be obtained in London or not, we are not certain, but we should think the seed of so valuable a sort, is in possession of some of the London Nurserymen: what we possess of it was received from Manchester.

RHUBARB PLANTS.—The plants of Rhubarb should not be allowed either to go into flower or seed; for if either be permitted, the produce will be greatly weakened.

J. HOWDEN.

ALPHA begs leave to return Nil Desperandum his best thanks, for his attention in transmitting the information inserted at page 784.

POLISHING SHELLS.—In reference to the wished for information, inserted at page 330, respecting polishing shells, it may be stated, that putty-powder is used in polishing the finest marbles, and may be used with equal success in polishing shells.

M.

PRESERVING APPLES.—Will you have the goodness to mention in a few words, what you consider to be the best mode of keeping apples? if on shelves, should there be bars to admit air under them? and what is the best covering for them? I have been told, that in America they cover them with a single cotton or linen cloth, which protects them from their severe frosts. Should light and air be admitted into the apple chamber?

A. B.

An answer in our next.

CONDUCTOR.

WITTY'S PATENT FURNACES.—A subscriber would be much obliged, if you, or any of your correspondents, who have seen any of Witty's Patent Smoke Consuming Furnaces for Hot-houses, would give a description of them. I think it would be generally interesting to your readers. I should like to hear also, if you or any of your correspondents have tried the quicksilver water, recommended by Speechley, for the destruction of insects on the pine, and whether it has been found successful.

Sussex, Nov. 20th, 1832.

E. ESBURY.

HARD-WATER, A GREAT PROMOTER OF THE GROWTH OF PLANTS.—In attempting to reply to the query of PAX, at page 812 of the *Register*, the first consideration is, whether it be an ascertained fact, that hard-water does greatly

promote the vegetable growth! if it be, then, the next inquiry should be directed to determine accurately the nature and components of the soil, to which, when applied, it affords a peculiar fertilizing quality. *Hard-water* usually contains carbonate or sulphate of lime; in other words, they hold in electro-chemical solution, certain portions of chalk, or of plaster-paris.—(Gypsum.) Now, if a soil abounds naturally with chalky matters, a water containing chalk or gypsum, cannot be supposed to meliorate it. But in dry peaty soil, replete with sharp (silicious) sand, and inert, or half-decomposed vegetable matters, chalky, or hard-water may be found very useful. Gardeners, and others, who pay much attention to plants in pots, are generally averse from the use of hard-water: they say, that "it does little or no good," and *experientia docet*. Still, however, the enquiry is worthy of notice, and of repeated trials. It should be borne in mind, that nature's great fertilizing medium, the *rain*, is soft in its quality: this bland fluid is not *chemically* pure, but at all events, it cannot be deemed hard-water, for it ever leaves the hands in a healthy and souple condition, and soap is not coagulated by it.

Nov. 12th, 1832.

G. I. T.

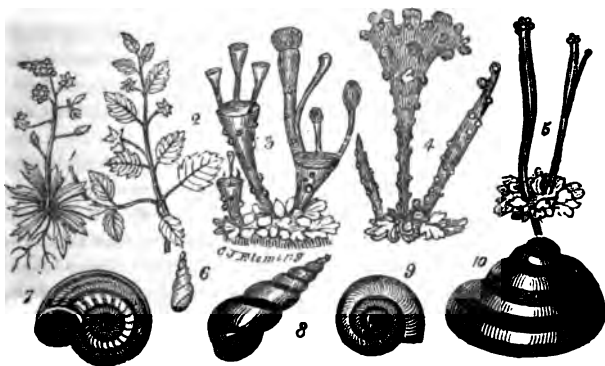
II. NATURALISTS' CALENDAR,

OR

OBSERVATIONS ON NATURE, FOR FEBRUARY.

THIS month and the next are amongst the most interesting to Naturalists. The swelling and pregnant buds, the appearance of early flowers, and the general motion of the vegetable creation, unite to proclaim the coming season. Amongst many plants may be noticed the *Erophila vulgaris*, or Spring Whitlow Grass, (1)

(Fig. 12.)



it may be found on walls, where, about the end of the month, it comes into flower; its flowers are white. In gardens and cultivated fields, the *Veronica agrestis* (2) may be plentifully collected; it grows about three inches high, and

bears a little blue flower. Many mosses are now in their fullest verdure, appearing destined to keep up the green tints of nature, when all other vegetation is dead and slumbering, and to protect the roots of larger plants from vicissitudes of cold, as well as of heat, and from too much moisture, as well as too great dryness. Marsh and water-mosses have a tendency to produce soil, and to convert morasses into solid land; while they effect the purification of water, in which they grow, by absorbing the putrescent substances with which it may be corrupted, and by exhaling oxygen in exchange.* Amongst lichens may be found on banks the *Cenomyce pyxidata*; (3) it grows in tufts about three quarters of an inch high, and may be easily known by its curious cups, and light blue colour. On the tops of high hills, grows the *C. bellidiflora*, (4) it is of a pale green colour, and grows in patches disposed in stiff scales: also in woods may be collected at all seasons the *C. baccillaris*, (5) it grows about two inches high, in branch-like rods of a whitish colour. To this genus belongs the lichen that feeds the vast herds of rein-deer, in Lapland, growing in amazing abundance, and covering the ground for vast tracts, like a sheet of snow; the *C. pyxidata* has been sometimes used as a cure for the whooping cough.

ESSENTIAL CHARACTERS OF THE ROOTS AND STEMS OF PLANTS.—In whatever medium they are developed, roots are always deprived of vital knots, symmetrically disposed at the surface, and consequently of foliaceous appendages. The multiplication of the branches is purely accidental. Stems on the contrary are always provided with vital knots, on the surface, symmetrically arranged, or accompanied by a foliaceous appendage: an organ sometimes reduced to a rudimentary state, or altogether wanting. Potatoes are not roots, but stems expanded at their extremities, and with the interior converted into feculent cells, mixed with fibres. And the same phenomena is observed in the bulbs of the Jerusalem Artichoke, but the Batatas or sweet potatoe is a true tuberculous root.—*Mem. du mus. d' Nat. His.*

BIRDS.—At first sight, it might be supposed, that in the tympanum of birds, there is only one orifice leading into the labyrinth; but it is not so; for this single opening is merely the entrance into a short canal, at the bottom of which are two holes, separated by a spiculum of bone, and corresponding to the fenestra ovalis, and fenestra rotunda in the mammalia. These in the dry bone, both open into the vestibule, in consequence of the rudimentary state of the cochlea; but, in the recent ear of the bird, in which some of the deficiency of the osseous part of the cochlea is supplied by the structure of the soft parts, there are, contrary to what is stated by M. de Blainville, the same relations between the cochlea, vestibule, and tympanum, as in the mammalia; one rudimentary scala of the cochlea communicating with the vestibule, and the other with the tympanum, by means of the fenestra rotunda, which is closed by a membrane.—*Edinb. Jour.* Since our last calendar, we have not observed a single specimen of the siskin, (*Carduelis spinus*) although throughout the months of November and December, we had large flocks of them. The fieldfares and redwings also appear to have nearly taken their leave of us, in the High Peak of Derbyshire.

MOLLUSCOUS ANIMALS.—Under stones, and amongst moss and grass, may be found *Bulimus lubricus*; (6) the shell is hardly a quarter of an inch long, and one-third of its length broad, of a glossy brown or horn colour, with often a reddish tinge, quite smooth and polished. On sandy pastures near the sea shore,

* Rennie.

may be plentifully met with the *B. fasciatus*, (8) this shell is very subject to variation of colour, but it is in general whitish, with brown streaks or bands, about half an inch or rather more in length, and one third as much broad, semitransparent, and coarsely wrinkled longitudinally. On heaths and other dry situations is the *Helix Ericetorum*, (7) the shell is nearly one inch in diameter, flat, of a grey or rusty brown colour, with generally a brown band above, continuing round the edge of the smaller volutions. Sometimes the bands are so obliterated, as to be hardly visible. Also in the same situations, may be seen in abundance the *H. virgata*; (9) it is about half an inch in diameter, and nearly as much high, usually white with a single dark brown band in the middle of the larger volutions, and several irregular ones at the base; but subject to great variation. In the Autumn these shells are often collected in such great numbers, as to give rise to the popular notion of their having fallen from the clouds. In warm weather, after a shower of rain, they ascend the blades of grass in prodigious numbers, and it is an opinion, (probably a correct one) that they tend greatly to fatten the sheep, which browse upon the short grass, and of necessity devour prodigious quantities of them. On dry sandy plains, every where, may be found the *H. cingenda*, (10) the shell is about half an inch in diameter, and not so much high; colour whitish or yellowish, rarely without coloured bands, but mostly with seven or eight brown circular lines on the lower volution, often broken into dots; the tip black; these bands are very variable.

INSECTS.—The knowledge of the form and disposition of the eggs of insects is of the greatest importance in Entomology, as it will enable the observer to decide immediately on the insect, to which any eggs he chances to meet with belong. The red hairy masses on the leaves of hedges and fruit trees, contain the eggs of the gold-tailed Moth, (*Porthesia Chrysorrhœa*); The small caterpillars spin together, and form those white bags, so common on trees during winter. The greyish hairy masses, disposed spirally around the branches of fruit trees, hedges, willows, &c. by the *Eriogaster lanestris* or small egger moth, may be plentifully collected through the winter. The red hairy masses, situated on the trunk and lower surface of the branches of the elm, lime, oak, and fruit trees, mark the eggs of the gypsy moth. (*Hypogymna dispar*.) We also see in winter, the ring formed by the union of the smooth eggs; disposed circularly around the branches of fruit trees by the lackey moth. (*Clisiocampa Neustria*.)^{*} These when hatched all feed upon the foliage; but there are others even more destructive still to trees, whose eggs are not so conspicuous, and whose larvæ eat through the bark to the pith, and thus feed upon the wood, and cause the trees to perish. Amongst these may be named, the Hornet Hawk Moth, (*Trochilium Crabroniformis*), the Bee Hawk Moth, (*T. apiformis*), the Breeze Hawk Moth, (*Ægeria asiliformis*, Fig. 13.) The Currant Hawk Moth, (*Æ. Tipuliformis*.) The Great Hawk Moth, (*Æ. Culiciformis*).

13



METEOROLOGY.—The interior temperature of the earth in this country, is seldom below 48 deg. Fahr. this is proved by the non-freezing of springs of water

^{*} *Bull de Se. Nat.*

during hard frosts, as well as by hoar frost and snow lying longer unmelted on dry cow-dung, and pieces of wood, than on grass and gravel walks, which are more rapid conductors of heat, passing from the interior of the earth. But in cases where the sun's heat can act in conjunction with the heat of the earth, the effect produced is often remarkable. The disappearance of frost, and the melting of snow, accompanied with copious rains, are intended by nature to loosen the soil for the expansion of the roots of plants, and at the same time to supply the fluids which are to form the sap. When chalk, limestone, or marble abounds either in rocky marshes, or diffused through the soil in form of sand or gravel, the thaws at this season tend to disintegrate those compact portions, and set free their carbonic acid, which, being washed down to the roots of plants by rain, constitutes an important portion of their nutriment, or at least, serves as a stimulant to excite the absorbent orifices of the fibrillæ to imbibe nutritive juices. —*Rennie, Notes of Nat.*

ZODIACAL LIGHT.—On the 11th of December last, we observed a remarkable luminous appearance in the heavens. It was about half-past nine o'clock in the evening, our attention was arrested by the appearance of a bright narrow band of light, extending from the eastern horizon nearly to the Zenith; we considered it to be a portion of an arc, which had extended across the sky from east to west, although we could not distinctly trace any remains towards the western part. It continued very bright till towards ten o'clock, when it gradually disappeared; it excelled in brilliancy the northern lights, and its colour was a bright yellow. The thermometer might be about 30 degrees the weather being rather frosty, and the wind about north. Several meteors have also been seen very bright of late. We supposed it to be what is generally termed a Zodiacal light. Perhaps some of our readers who saw it, may be able to give us a more accurate account.

Dew.—The annual average quantity deposited in this country, is estimated at a depth of about five inches, being about one-fourth of the mean quantity of moisture, supposed to be received from the atmosphere over all Great Britain in the year, or about 22, 161, 337, 335 tons, taking the ton at 232 imperial gallons.

TABLE,

SHewing IN HOURS, THE WHOLE AMOUNT OF SUN-SHINE, DURING THE YEAR 1832, TAKEN MORNING AND EVENING, EVERY DAY AT CHATSWORTH.

<i>Months.</i>	<i>Morning.</i>	<i>Evening.</i>	<i>Total.</i>
January	12½ Hours.	16 Hours.	28½ Hours.
February	30½ do.	45½ do.	76 do.
March	54½ do.	62½ do.	117½ do.
April	50½ do.	82½ do.	133 do.
May	131½ do.	80½ do.	212 do.
June	107 do.	97½ do.	204½ do.
July	72½ do.	87½ do.	159½ do.
August	74½ do.	97½ do.	172½ do.
September	59½ do.	79½ do.	139 do.
October	39 do.	38½ do.	77½ do.
November	32½ do.	28½ do.	61 do.
December	27½ do.	19½ do.	47 do.
	691½	736	1427½

Forty-four hours and a half more sun-shine in the afternoon than morning throughout the year.

III.—SOCIETIES,

CONNECTED WITH HORTICULTURE AND NATURAL HISTORY.

LONDON HORTICULTURAL SOCIETY.

At the December Meeting, the most remarkable exhibition consisted of six varieties of seedling Chrysanthemums from Mr. Wheeler, of Oxford, three of the sorts were equal in beauty to the Chinese, and all them completely distinct from their Eastern brethren. We understand these are the first of his seedlings which have flowered, and his success has been such as to raise between eighty and ninety plants. Mr. Kirke exhibited a very fine collection of twenty-five sorts of apples and Napoleon pears. Mr. George White, a Queen pine apple, (weight, 2 lbs. 8 oz.) T. J. Wilmot, Esq. of Coventry, an excellent seedling apple, called the Eldon Pippin. Mrs. Marryat, a collection of roses, &c. Mr. J. L. Snow, a seedling cactus, and a hybrid cineraria, and Messrs. Chandler, twenty-one varieties of Chrysanthemums.

Papers were read "On the uses and cultivation in the climate of England, of the Zea Mays or Indian Corn." By the Author of the Domestic Gardener's Manual, and some "notes on Chinese Chrysanthemums," by Mr. Donald Munro. Intimation was made to the members, that six lectures on Botany would be given in the months of April, May, June, and July next.

IV—MONTHLY HORTICULTURAL CALENDAR.

FOR FEBRUARY.

VEGETABLE DEPARTMENT.

WHATEVER February may bring forth we know not, January, with the exception of a few frosty days, has been exceedingly mild, although we have had less sunshine than in January last year, and should February continue open and not be excessively wet, advantage may be taken towards the end, to get in many of the principal crops, and make preparation for the remainder in March.

Peas and Beans should be sown about the middle and end of the month; where it can be done; the most economical method is to sow in drills from ten to twenty feet apart, and fill between the rows afterwards with such crops as are requisite. It is also advisable to sow some in boxes, and place them on the flues of the vinery; lay about two inches thick of rotten dung at the bottom of the box, for the roots to run in. (See Vol. I.) The early Frame peas, and the Maragan and Lisbon are the best Beans for this season. See volume I, page 842.

Brocoli.—Sow a little of the Impregnated Early White to produce from the beginning of November to Christmas.

Potatoes.—Plant the Early Manly, and Early Kidney close under a south wall, or under the wall of a hothouse, and mix a large portion of sand in the soil; to come into eating towards the end of May.

Celery sown on a slight hotbed, or in pans, will be much earlier than that sown in the open ground, a little canflower seed may also be scattered over the bed to succeed those under glasses.

Radishes and Lettuce should be sown in light soil twice in the month.

Carrots.—Sow the Early Horn, and the Early Short Red Horn on a slight hotbed in the beginning of the month for the first crop, and towards the end on a warm south border to succeed them.

Spinach.—Towards the middle of the month sow some Flanders and round seeded spinach to succeed the winter crops.

Onions.—About the end of the month, if the weather be favourable and the ground prepared, sow the main crop, in beds four feet and a half wide, and drilled six inches apart in the beds.

Parsley, Thyme, and various other potherbs, may be sown towards the end of the month.

Mustard and Cress may still be sown in pans or boxes every week, and placed on the flues of the vinery, or other warm situation.

Rhubarb.—Plant two year old roots for forcing, as recommended last month.

Kidney Beans.—Sow the cream-coloured and early-buff in small pots, partly filled with light mould, or soil from a cucumber bed, and set them on the flues; when in the first rough leaf, turn them out with balls into pots ten inches deep, spreading the plants round the edges of the pots, and raising the soil as high as the cotyledons; they require a heat from 66 to 75 degrees Fahr. to bring them to perfection, with plenty of air: avoids topping the plants, and sow once a week where a regular supply is wanted.

Asparagus may be still taken up, and planted in a frame on a slight hotbed for forcing.

Parsnips.—At the end of the month, sow the Guernsey and hollow-crowned sorts, for a main crop.

Shallots and Garlic should be planted towards the end of the month, when not done in the autumn, in drills fifteen inches apart, and six inches from root to root in the drill.

Cabbages.—Plant out autumn sown ones for use in July, and sow a little seed for use, as greens in August and September.

FLOWER DEPARTMENT.

Roses in Pots now placed in the forcing-houses, will produce flowers towards the middle of April.

Annuals.—For a selection of the finest sorts, see p. 30, of the present volume.

Auriculas should now be top-dressed, with a mixture of fresh yellow loam, rotten horse dung, river sand, leaf mould, and sheep or fowls' dung, as recommended Vol. 1.

Dahlia seed should now be sown in pots, and placed in a hot-bed frame, and a few old roots plunged in tan about the middle of the month.

Polyanthuses should now be top-dressed with light maiden soil, mixed with a little new horse-dung; and the seed should be sown in boxes or pans filled with light new mould.

Ranunculuses should be planted about the end of the month in prepared beds.

Tulips in beds should be carefully examined on a dry day, after they appear above ground, and all injured parts of both leaves and roots removed. If the seed sown last year is up, let the young plants be pricked off, either in pots, or in a bed of light sandy soil.

FRUIT DEPARTMENT.

Vines.—Prune such as are planted to bear fruit in green-houses. Also introduce vines in pots into the vinery, to ripen their fruit in June. Grapes that were set last month will require thinning, and the young shoots of the vines tying in. See Vol. 1.

Cherry Houses will now require attention. Admit air night and day, and if the weather be frosty, increase the fire to keep the thermometer as high as 40 deg. for during the time of flowering they will bear but little heat. Pick off the curled leaves, and destroy the caterpillars they contain.

Strawberries in Pots bring in once a fortnight, and give them a plentiful supply of water.

Peach Houses.—When the trees are in flower, or setting their fruit, give abundance of air as early in the morning as possible, and shut up early in the afternoon; the less fire is used in forcing the better. Occasionally moisten the air by steaming.

Peaches and Nectarines on the open wall, should have their buds advanced a little before pruning, or they are liable to be injured, if the weather comes severe.

Pruning and Nailing generally, must be finished as soon as possible, or it will interfere with other spring work.

Raspberries.—Plant in rows five feet apart, and four feet from stool to stool in the rows; let each stool contain three plants in a triangular form, and cut them down to about two feet high.

Graft Fruit Trees, where it is wished to change the sorts.

THE HORTICULTURAL REGISTER.

MARCH 1st, 1833.

PART I. ORIGINAL COMMUNICATIONS.

HORTICULTURE.—ARTICLE I.

ON THE CULTIVATION OF THE STRIPED HOUSAINEE PERSIAN MELON.

BY THE AUTHOR OF THE DOMESTIC GARDENER'S MANUAL, C. M. H. S.

(*Second Paper.*)

IF the reader will do me the favour to reperuse my previous article upon this subject, Vol. 1, page 772, he will perceive that I promised to give in a second paper, the detail of an experiment which should elucidate many of the facts adduced in the first. The season is approaching in which the culture of this melon should commence, I therefore hasten to complete my promise ; and while I apologise for the unavoidable length of this communication, I feel it a duty to assure the reader that if he find any point of difficulty, or any apparent omission, which ought to be cleared up or supplied, and will explicitly state such among the Queries of the *Register*, I will not be remiss in duly considering and replying to the same ; for it is my earnest desire to render the production of this fruit as easy as that of the black rock, or any other thick rind trash, that has heretofore been exclusively grown.

However, before I proceed in my directions, I must refer very particularly to the description I have given of the fruit in the several stages of its growth, and of its appearance and flavour when perfectly

ripe; it is of great moment to be very accurate in the discrimination of fruits, for such is the accumulation of varieties, and the uncertainty of written descriptions, that great confusion must otherwise prevail.

The Striped Housainee is correctly described in the fourth paragraph of page 776, yet how very different must that appear from the fruit mentioned in the catalogue at page 830 of the *Horticultural Register*. The rind *may* be said to be *greenish*, but can the flesh be considered *white* by any one who has seen the genuine fruit? The weight too is said to be, three or four pounds. Now I venture to assert that, as a whole, this description in the Register is decidedly erroneous, and that upon tolerably sure grounds. The seed I sowed was received from Mr. Knight himself, it came to me directed in his own hand writing, so did that of the Sweet Melon, of Ispahan, the fruit of which is very incorrectly described at page 830, inasmuch as the flesh is said to be *green*. The flesh of the Ispahan is nearly white, and of one unmixed tint, but that of the Striped Housainee is of three distinct shades, not one of which approaches to a white, properly so called.

The House in which I produced the fruit was, in the first instance, only twelve feet long; an addition, however, was made to it at one end, during the growth of the plants: this led to a singular result, which will hereafter be noticed. The height of the house at the back wall was seven feet; a walk two feet wide ran immediately within, and along this wall; and a flue nine inches broad, and about eighteen inches deep, including its base, was in front of the walk, its internal face forming the basis of the wall of a pit, that contained a leaf-bed three feet in depth. The back of the pit therefore, measuring from the inner face of the bricks, was three feet in advance of the wall of the house.

The temperature of the leaves, oak and beech, was generally from 75 to 82 degrees, rarely higher; and in this bed a few pine-apple plants were plunged. Hence the melons were to be trained over the space occupied by the pit wall, the flue, and walk; so as not to overshadow the pines. The slope of the lights formed an angle of 25 degrees, that is $2\frac{1}{4}$ degrees more than the fourth part of a quadrant or quarter circle.

The limits afforded to my plants were too contracted to permit the stems to attain a sufficient perpendicular growth before they made their bend under the angle of the glass; which angle the advancing shoots ought always to follow correctly, at a distance of twelve or fourteen inches below the lights; because a full exposure to light,

(sun-light) is indispensable for the healthy progress of this melon. Its leaves are immensely large, and the upper surface of each ought to enjoy a full exposure to the rays. Those under shadow are rendered incapable of elaborating the sap, and consequently, of effecting those electric-chemical changes, which the direct rays occasion, perhaps in a great degree by their own fixation and partial decomposition. The leaves also are liable to injury from those sudden spring frosts that, in the absence of fire, might even form an icy scale upon the glass; therefore a distance of twelve inches at the least, below it, ought to be provided for; and to admit of this distance, the height of the back walk should be about nine feet, with the slope of the lights amounting to an angle of thirty degrees. I must here refer the reader to a description of Mr. Knight's melon-house for the cultivation of the Persian tribe, given at vol. 1, p. 263 and 302 of the *Register*. My pit presented only an expedient, attended with the following disadvantages. It was too low, and was not so constructed as to admit currents of air without letting down the lights: it had not a flue *in front* to create a full and equable diffusion of heated air; and finally, it did not enjoy a full southern exposure. The results were, therefore, a too tardy progress on the growth of the herb, and in the ripening of the fruit; the plants also were far too crowded and confined. Nevertheless I produced fine and excellent fruit. They, therefore, who wish to experimentise even with defective machinery, may do so with considerable confidence, and thus the public may by degrees acquire some knowledge of, and begin to estimate a noble fruit, of which, even the fruiterers are as yet in a state of all but ignorance. After these preliminary remarks I proceed to the

PARTICULARS OF THE CULTURE.

Sowing—March 11th, 1832. The seeds were sown in small pots, (48th size) that were previously netted with hay, in order to secure the removal of an entire ball. Upon this hay the soil was placed; it was a rich, sandy, and adhesive loam, and a single seed was set in each pot, half an inch below the surface; the pots were then plunged to their rims in the leaves. It will be borne in mind, that these produced *no bottom heat*, compared with that of a dung hot-bed; they served merely to raise and keep up the temperature of the soil to a point just above the average heat of the air of the house.

Transplanting into large Pots.—April 9th. The most forward plant was on this day removed to its fruiting pot; I propose to confine my future observations to this subject only, to avoid confusion. The plant was three or four inches high, and had developed several

fine true leaves, two inches in diameter. The pot it was transferred to, was twelve inches broad at the rim, and of equal depth, both internal measure; it was a sea-kale pot inverted, the lower orifice six inches wide, was closed with a circular grass turf, eight inches broad and above an inch thick; the pot was plunged into the leaves (upon which the *grass surface* rested) close to the back wall of the pit.

It was next filled with a soil composed of five parts of chopped turf, with its herbage, and one part of the recent dung of poultry, well incorporated together. The mould of the turf was a sandy hazel loam, which, chemically viewed, consisted of a large portion of siliceous (gravelly) sand, and perhaps one-third of argillaceous or clayey earth, with a small quantity of chalk, (*carbonate of lime.*) It derived its hazel colour from a sub-oxide of iron, of ocherous quality. This colour was gradually changed to a dark grey or black, partly by the abstraction of some of the oxygen of the iron, during the decomposition of the vegetable and animal matters, and partly by the formation of carbon, resulting from that decomposition.

The soil being thus prepared, and its temperature raised by the warmth of the leaf-bed, and by that radiated from the side of the flue within the pit, the young plant was removed from the small pot, and deposited in a hole made in the centre of the large one: the ball was entire, the roots having insinuated themselves into the hay. The soil of the great pot was then brought up to, and pressed firmly about the ball and lower part of the stem; a slight watering was given with water at about 70 deg. and in a few days the surface was covered over with sand.

Training.—The plant did not shrink, it soon naturalised itself to the new soil, and grew with rapidity. A stake was placed in the pot, and secured to a cross-rail, that ran horizontally over the shelf of the pit, twelve inches below the glass, and three feet in front of the back wall of the house. From this cross-rail, small laths were laid to the wall in a slope corresponding with that of the lights; and other laths were laid across, so as to form an open trellis-work, with spaces wide enough to allow the free use of the hands in tying up the shoots. The plant was trained up, and secured to the stake till it reached the cross-rail, and every lateral and tendril was pinched off during this *perpendicular* growth.

May 16th, it had fourteen clear joints, and then, *just above the cross-rail*, the shoot was stopped about the tenth or eleventh joint: all the leaves upon the stem were most carefully retained.

Three lateral shoots were soon produced; and on the 26th of May, five fruits were swelling. Two of these were on a lower shoot

about the ninth joint, and were, with the shoot itself, cut off. Two other laterals from the tenth and twelfth joints, were inclined to the right and left upon the trellis; and a third or central shoot was, in a short time afterwards, conducted directly up the slope. At the end of May, the plant, from the surface of the soil to the termination of the central leader, had twenty clear joints, and the early leaves were from nine to twelve inches in breadth.

June 2nd.—Two of the best swelled fruits were selected; the rest (seven in number) were, from time to time removed: the three chief shoots only, were permitted to grow, but these were retained at their full length.

Setting the Fruit.—I ought, perhaps, to have mentioned this operation before; however, it is of little consequence, I regularly attended to it as the female blossoms became manifest, although I am not quite satisfied, that any certain effects result from the practice. I have witnessed its inefficacy in nine cases out of ten, and cannot accede to the common opinion, that, until bees or flies be in a state of activity, the fruit will fail, for want of a due application of the pollen or *farina fructicans*. When I consider that Dioicous plants in situations very remote from one another, produce perfect seeds, I cannot but conclude, that attractions may exist which the eye cannot discern, nor the mind comprehend; minute insects too, not seen nor suspected, may be at hand at every season: still as the process of artificial impregnation may be useful, is recommended, and cannot do any great injury. I will describe it.

The fruitful blossom ought to be fully expanded, and the stamens of the male flower matured; that is, the dust should be distinctly visible upon the anthers. When two blossoms co-exist in this favourable state, the latter is to be gathered and deprived of its corolla; it is then to be held between the finger and thumb of the right hand, or by a small pair of pincers, and inverted into the female flower, which is held upright by the left hand, so that the anthers may come in contact with the stigma of the female. In this position, it is to be pressed cautiously, but firmly down; and then, may either be simply left in the flower, or as is practised by some, may be confined within it, by passing a thread or strip of bass round the petal, till that decay of itself. Whatever be thought of the utility of impregnation, I earnestly recommend, that no one ever pull off the male blossoms as useless, or from the idea that they exhaust the plant: nature may herein be trusted; the male flowers are not produced in vain.

Water.—This was given whenever the soil became dry at the sur-

face, or the leaves began to droop : the temperature was about that of the average of the house, 70 to 75 degrees. Liquid manure from steeped sheep or poultry dung, was given to the extent of a quart or more, once or twice a week. To prepare this liquid, put into a three gallon tub about one-fourth of its content of recent dung ; add a gallon of scalding water, and mash the mass till the lumps be broken up ; then fill the tub with cold rain water. Stir the mixture thoroughly twice, and let it settle : the clear supernatant liquor only, is to be used. If this became very fetid, a few grains of *good* powdered chloride of lime, added to each quart, will be an effectual remedy. While on the subject of watering, I must observe, that when melons are grown in pots, the soil must be kept moist till the fruit gives evidence of approaching to maturity ; then, the quantity of water must be greatly abated. Mr. Knight cultivates his Persian melons in large pots, the internal dimensions of which, are about sixteen inches in depth, and seventeen inches in width at the top ; yet he keeps the soil moist to the bottom. My melons were planted out into pots greatly too small to support their growth, as I discovered by observing, that the roots ramified far and wide among the leaves of the bed ; and that a plant in a pot, which was not plunged, could scarcely be kept alive. If the *striped Housainee* be grown on dung beds, and the soil be very firm and clayey, it may, as was remarked by the conductors of the *Horticultural Register*, vol. 1, page 164, produce very fine fruit without waterings ; but in pots, whether the soil be rich and light, or firm and heavy, the plants must be liberally watered, or they will fail.

Rich liquid manure continually supplied to a soil originally impregnated with decomposable, vegetable, and annual substances, must be a succedaneum for space. In the native country of this fruit, a liberal quantity of water at the sub-stratum, under the rich beds of earth, amply supplied with doves' dung, has been provided for by the Persian gardener for ages past. The *Encyclopædia of Gardening*, page 100, No. 466, observes :—"Doves' dung is in great request in Persia and Syria, for the culture of melons. Large pigeon-houses are built in many places, expressly to collect it. The melon is now, as it was 2500 years ago, one of the necessities of life ; and when the Prophet Isaiah meant to convey an idea of a famine, he predicted that a cab of doves' dung would be sold for a shekel of silver :"—about half-a-crown.

Persia is an extremely hot climate, but the cold during the nights is, in many parts very severe, and the *dews* consequently very abundant. This fact will justify the practice of keeping up in our pine

and melon departments, very high temperature during bright sunshine, and of permitting it to decline greatly during the night. I, very frequently, had 100 degrees in my pit during the day, and found the thermometer at 65 to 60, and even lower, on the following morning.

To finish the subject of watering ; it seems improper to syringe or water the foliage of the leaves of the melon growing under glass. The supply of moisture must be given to the roots, and whatever is furnished to the foliage, ought to be deposited in the form of dew raised by sprinkling the flues and paths an hour before sun-set. The steam exhaled will be attracted by the pointed portions of the leaves, and the bristles or hairy down on their surfaces.

Air.—I could admit air only by sliding down the top lights, or by opening the door at the back of the house ; hence, it was given partially, but this ought not to be done. Air ought to flow in an *equable stream* in the direction of the slope from front to back ; but *wind* should never blow upon the plants : my experience has taught me that fact. I again refer the reader to vol. 1, p. 263, of the *Reg.* for a description of Mr. Knight's house, erected for the express culture of the melons of Persia, in pots : it appears to comprise every requisite that machinery can supply, for insuring the perfect maturity of a fruit, that is native of a climate so essentially different from that of our own country. In a house so constructed, *air can be admitted and discharged, without disturbing the lights*, and, *through small apertures, always under the controul of the operator* : the result is, that, the temperature may be kept regular, and a stream of air distributed throughout that part of the house which is occupied by the foliage, night and day ; the flues, or hot water apparatus, supplying the requisite degree of radiated heat, at all times when the absence or deficiency of sun-light, renders it needful to secure the minimum temperature by artificial means.

Temperature.—Seventy degrees in the day-time, exclusive of heat from direct solar height, ought to be aimed at : sixty degrees should be kept up during the night. These, I consider the minima during day and night, to be maintained with an admission of *external air*, whenever that air is not under 40 degrees. In direct sunshine, 80 to 100 degrees, the thermometer being completely in the shade, may be allowed with advantage. The foliage and fruit must be shaded from brilliant sun-light at the mid-day hours, by double nets, or a canvass screen.

Progress of the Fruit.—June 4th. The two melons that were swelling on the plant, had now attained in length ; the larger, three

inches and a half, the small one, an inch and a half. From this period they advanced regularly; the one being at all times proportionably less than the other. I did not accurately note the dates when they ceased to enlarge; but two or three weeks subsequently elapsed before they became ripe. The smaller melon was cut on or about the first day of August: it weighed three pounds six ounces. The larger fruit was cut in a perfectly mature state on the twenty-fourth of that month; it measured nine inches in length, about twenty inches in the girth, and weighed six pounds five ounces. I kept it for above a week, and then sent it to the London Horticultural Society, with a paper containing the particulars of its culture.

Shortly after I was honoured by a letter from Mr. Lindley, dated September 6, wherein I was assured that the Melon had been "laid before the Garden Committee" and was "an excellent fruit." At vol. 1, p. 778 of the *Reg.* I have mentioned the tardiness of this variety in ripening; the period was much prolonged with me, not only by the easterly aspect of my house, but in consequence of the alteration by which one end of it was laid open for many days. This caused an irregularity in the temperature, and much exposure to wind, whereby the foliage was deranged; and the fruit arrested in its growth. One plant, in fact, that was fully exposed, was killed; the foliage being dried up, as if a fire had been kindled under it. I mention this, in order to caution other cultivators to avoid, as much as possible, the evil of suffering a stream of air to beat down upon the surface of the leaves.

If any of your readers Sir, be really desirous of making a trial during the present year, but find a difficulty in procuring seed, I shall feel happy to prove, by more than mere words, the anxiety I feel of promoting the progress of this delicious fruit, to the exclusion of the old varieties. I therefore, herewith, place at your disposal, a few packets of seeds of the Housainee and sweet Ispahan melon,* both grown by myself last summer; I hope you will have applicants sufficient to take them off your hands, and that ample success will attend each experiment. It will be clearly understood, that you are to be put to no expense, either by letter or otherwise, on the part of any one who may wish to avail himself of an offer that is *freely* made.

G. I. T.

January 4th, 1833.

* I had six packets of a species, which I consider a variety of the great Germek, if not the Germek itself; it is, without exception, the finest frame or bed melon that I ever saw, prolific, and of easy culture: the seeds originally came from a nobleman's estate, but without a name.

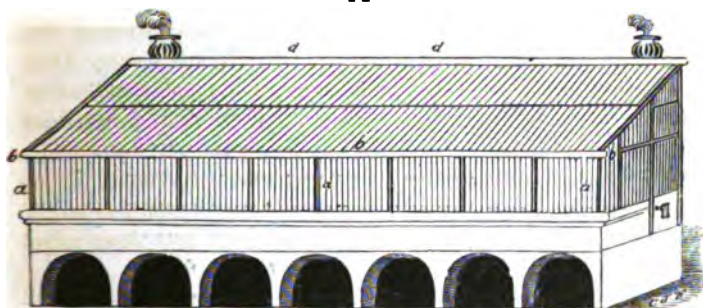
ARTICLE II.

DESCRIPTION AND PROBABLE EXPENSE OF ERECTING A
METALLIC ROOFED VINERY.

BY MR. WALDRON.

I HAVE sent you a sketch of an iron-roofed vinery, (fig. 14,) which I would strongly recommend, both for utility and beauty. I am persuaded, one great reason, why metal houses are not found to answer well, is from their not being well constructed; they are very often built by persons totally unacquainted with the advantages or disadvantages vegetation derives, from certain modes of construction, and in very many instances, the gardener has not even an opportunity of giving his opinion on the subject. When they are set to work, however, and not found to answer, the blame generally falls

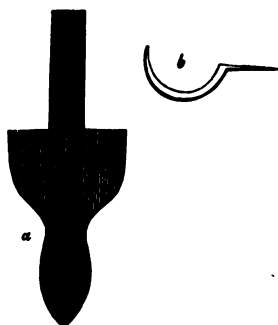
14



upon the gardener's shoulders.

The plan of the house I have sent, is to contain 12,000 and upwards of cubic feet; and supposing the atmosphere, to be as cold as Zero, the hot-water apparatus of mine, you inserted vol. 1, page 681, will give 3,318 cubic inches, at the temperature of 180 degrees, which will throw a heat into this 30 feet house of 58 degrees. If every house could thus be readily supplied

with heat, I think metallic houses would not be in such disrepute. I have had under my care for seven years, houses constructed on this principle, used both for pines, vines, and peaches; and I feel quite satisfied, that if there is a good command of heat, they will be found



the best kind of houses constructed. The aspect I would recommend, is for the house to receive the full sun at eleven o'clock in the day, and be so situated as to have the sun-shine, from four in the morning to eight o'clock in the evening. The uprights in front (a) are three inches wide and half an inch thick, set in stone, each sash swings open with a pivot; the spout (b) is four inches wide, and rests upon the top of the front sashes, fastening to them with screws. The astrickles or sash bars (c) should be the size and weight of one pound to a foot, and screwed at one end to the spout, and the other to the stone coping at the top (d). The rafters are four inches wide, and half an inch thick; the lights in front all swing open; there is also a light over each door, to slide or swing, and three slides of wood in the back wall, within six inches of the top, to let off the vapours when necessary. The roof is all fast, and the air is only admitted through the back, front, and ends.

JAS. WALDRON.

PROBABLE EXPENSES OF ERECTION, &c.

	£.	s.	d.
Price of Glass at W. Mitchell's, 32, Tottenham Court Road, 1,100 feet of thirds, 6 by 4, at 7½d. per foot. }	34	7	6
Putty, 5 cwt. at 18s.....	4	10	0
Labour.....	4	0	0
Astrickles or Sash-bars, 15 cwt. and a half, at 12s.....	9	6	0
Nine Uprights in front, 2 cwt. at 10s.....	1	0	0
Two end Rafters, 3 cwt. at 10s.....	1	10	0
Thirty Feet of Spouting, 3 cwt. at 10s.....	1	10	0
Thirty Feet of Cross-Pieces, to support the Astrickles } or Sash-bars, 2 cwt. at 10s..... }	1	0	0
Three Uprights for ditto, 2 cwt. and a quarter, at 10s.....	1	2	6
Eight Front Sashes, 2 cwt. and a half, at 12s.....	1	10	0
Ninety Feet of Stone Coping, at 6d.....	2	5	0
13,656 Bricks, Labour, Lime, &c.....	42	15	0
Wood Work for doors and frames.....	3	0	0
Three Slides to admit air through the back wall.	0	12	0
Screws, Labour, fixing Astrickles, &c.	4	0	0
Three Coats of Stone-coloured Paint.....	5	10	0
Whole cost, independent of the Hot-Water } Apparatus, figured Vol. 1, page 681. }	£117	8	0

ARTICLE III.

THE FLOATING GARDENS OF CASHMERE.

COMMUNICATED BY J. T.

*Extracted from Notices of the Natural Productions and Agriculture of Cashmere.**From the Manuscript Paper of the late Mr. Wm. Moorcroft, Published in the Journal of the Royal Geographical Society, Vol. 2.*

THE city of Cashmere is situated in the midst of numerous lakes, connected with each other, and with the river Vedusta, by canals, separated by narrow lines, and insulated plots of ground; in some localities, so far raised above the water-line, as to be out of danger of inundations, which are not uncommon, and, indeed, become annually more frequent, through the neglect of the government in not checking the accumulating growth of weeds and mud, which diminish the depth of the lakes, and consequently increase their surface.

These circumstances have suggested an expedient by which certain vegetables are cultivated in safety, and so that they derive as much moisture as may be beneficial to them without being exposed to the risk of being destroyed. This is effected through the medium of a floating support, of which the buoyancy and flexibility prevent the plants sinking into the mass, or being partially covered with it. Various aquatic plants spring from the bottom of the lakes, as water lillies, conservæ, sedges, reeds, &c. and as the boats which traverse these waters, take generally the shortest line they can pursue, to the place of their destination, the lakes are in some parts cut as it were into avenues separated by beds of sedges and reeds. In these places then, the farmer establishes his cucumber and melon-floats, by cutting off the roots of the aquatic plants just mentioned, about two feet under the water, so that they completely lose all connexion with the bottom of the lake, but retain their former situation in respect to each other. When thus detached from the soil, they are pressed into somewhat closer contact, and formed into beds of about two yards in breadth, and of an indefinite length. The heads of the sedges, reeds, and other plants of the float are cut off, laid on its surface, and covered with a thin coat of mud, which at first interrupted in its descent, gradually sinks into the mass of matted roots. The bed floats, but is kept in its place by a stake of willow drawn through it at each end, which admits of its rising and falling, in accommoda-

tion to the rise and fall of the water. By means of a long pole thrust among the reeds at the bottom of the lake from the side of a boat, and turned round several times in the same direction, a quantity of the conservæ, and of other plants are torn off from the bottom, and carried in the boat to the platform, where the weeds are twisted in conical mounds about two feet in diameter at their base, and of the same height, terminating at the top in a hollow, which is filled with fresh soft mud drawn from the bottom of the lake, to which sometimes wood ashes are added, though much more frequently omitted. The farmer has in preparation a number of cucumber and melon plants, which have been raised under mats, and of these, when they have four leaves, he places three plants in the basin of every cone or mound, of which a double row runs along the edge of every bed, at about two feet distance from each other. No further care is necessary except that of collecting the fruit, and the expence of preparing the platforms and cones is confined to the value of the labour, which together is trifling, as the work is very soon done. Perhaps a more economical method of raising cucumbers cannot be devised; and though the narrow beds are almost in contact by their sides, yet from their flexible nature, they are so easy separable that a small boat may be readily pushed betwixt the lines without injuring their structure; and for the most part they will bear a man's weight, though generally the fruit is picked off from a boat. I traversed a tract of about fifty acres of these floating gardens in cucumbers and melons, and saw not above half a dozen unhealthy plants; nor have I seen in the cucumber or melon grounds, in the vicinity of any populous cities of Europe or in Asia, so large an expanse of plants in a state equally healthy, though it must be observed running in somewhat too great luxuriance of growth.

It is presumed that the onion may be raised largely in this manner, and perhaps water culture may be found susceptible of being extended to many other plants besides these. The traveller who finds the water-melon of vast size buried in the hot and dry sand of the desert, would not be readily tempted to conclude that it could be raised in nearly equal luxuriance of growth, in the cool and humid atmosphere of a floating garden, yet the fact points out an accommodating power in the constitution of this plant, which may be as largely found in others, where, at present, it has not been supposed to reside. The subject is of extreme importance, the water surface of our islands having never been suitably called upon to contribute its share of produce for the maintenance of our population.

In one of my visits to one of these floating gardens, I observed

that the stems of many plants had been newly earthed up, with a few handfuls of black mud, brought from the bottom of the lake. The general depth of the floating beds, or mass of reeds, and of earth taken together, was about two feet, and some of the beds were about seven feet broad. The general arrangement was a line of cucumber cones, bordering each edge, and one of water or musk melon, along the middle. The melon plants were peculiarly strong, and their cones were wound round with a fresh addition of conservæ, and of other weeds, so as to give to each, five feet in diameter. The season lasts for three months and a half, beginning in June. The fruit is seldom or never pulled in a small or girkin state, and differs in weight, when of a proper age for the market, from about eight or ten ounces to a pound and a quarter, or a pound and a half. From the first setting off the fruit to the time of pulling, seven or eight days are the ordinary period. The cucumbers yield about thirty full-sized fruit from each plant, or ninety to an hundred from each cone. The produce of the melons and the water-melons are numerically less; but the return of profit is at least equal. The seed of the melon is brought annually from Ballistan or little Tibert, and the first year yields fruit of from four to nine or ten pounds each, in weight; but if the seed of this melon be resown, the produce the second year exceeds not two or three pounds. On a more minute inquiry it would seem that the melons are sweet, and well flavoured, whilst the water melons are of the common quality. The melon, except when eaten to great excess, produces no derangement in the intestines, but on the contrary sometimes causes purging. It is remarked that healthy people who live upon this fruit almost wholly during the season, become speedily fat, and the same effect is reported in regard to horses fed on the fruit at Bokhara. Thefts of whole floats are sometimes committed by persons joining in two or three boats to tow them off to distant parts of the lake in the night. The floating gardens are generally cut off from the body of the lake by a belt of floating reeds, which also answer, in some degree, the purpose of defending the cones against the effects of winds. Altogether this variety of farming is highly profitable, and ought to be adopted in Europe as a great resource for raising food for man.

FLORICULTURE.

ARTICLE IV.—ON THE CULTIVATION OF ANNUALS :

To which is appended, a Select List of Hardy Biennials and Perennials.

BY JOS. FAXTON, F. L. S. H. S.

ALL Annuals are raised from seeds, and are either *hardy*,—and may be sown in the open border ; *half-hardy*—requiring to be sown on a hot-bed, and afterwards transplanted ; or *tender*,—requiring to be kept during the summer in the green-house or stove. The first thrive well in any common light soil, with little attention, except keeping them free from weeds ; the second, require rather more care during their early growth, although afterwards they grow well in the same soil as the hardy ones ; the third, want considerable attention all summer, the soil most suitable for them generally, is about two-thirds of light rich loam, and one-third of rotten dung or leaf-mould.

Treatment of Hardy Annuals.—About the end of February or beginning of March, commence sowing the seeds after the following manner :—stir up the soil, and make it fine with the hand, if it be light ; if not, with a small hand-hoe or fork ; then with the finger draw a circular drill, of about six inches diameter in the circle, and one inch or less deep, according to the size and habit of the plant intended to be sown ; cover the seed lightly with moist soil, and place an inverted flower-pot over them (if convenient to do so,) allow the pot to remain until the seeds have begun to grow, then prop it on one side two or three inches high, until the plants are able to bear the weather, afterwards remove it altogether. Covering the seeds with a pot, answers several good purposes : 1st. it keeps the soil moist, until the seeds have vegetated ; 2nd. the sun shining on the pot, causes a reflection of considerable heat, and brings up the seeds much sooner, than under other circumstances ; 3rd. it screens them from the spring frosts ; 4th. it prevents the soil from being washed off the seeds, or the seeds themselves being washed away by heavy rains ; and 5th. its preserves them from birds and mice. When the plants are about an inch high, they must be thinned out, according to the kind, that those remaining may be able to grow and flower strong ; the height the plants grow, must also guide the person as to what part of the border they ought to occupy, which (where the se-

lection is choice,) may be known by referring to page 30, of the present Volume. If sown successively through the summer, there will be a constant supply of flowers, till the autumnal frosts kill them; in mild winters, they may be kept till towards Christmas. Staking, tying, and occasionally stirring the soil, and in dry summers gently watering in an evening, is then all that is necessary.

Treatment of Half-hardy Annuals.---These require to be raised on a hot-bed; and when an inch or two high, transplanted either in pots or otherwise, as most convenient. When there is only the privilege of one frame, we should recommend a re-perusal of our "remarks on the uses of a two light frame," vol. 1, page 578, where we stated, that "in February, the camellias and other plants might be removed from it, to the situations most convenient for them to flower, and a bed might be made for the growth of potatoes, raddishes, &c. &c." and by the beginning of March, another for the growth of cucumbers: if, however, flowers are preferred to cucumbers, we should recommend, that in the beginning of March, the frame be removed from the potatoe bed, and another bed prepared of the proper dimensions, about two feet thick in front, and two feet six inches at the back; beat it down pretty level with a fork, but do not trample it, set on the frame, cover it with lights, and allow it to stand three days to settle; then level it properly, and lay on about four inches thick of soil, composed of two-thirds of light sandy loam, and one-third of leaf-mould, well beaten together, but not sifted; rake the surface smooth and level, and with the hand draw some shallow drills about three inches apart; then thinly scatter the seeds of each sort in the drills, and cover them lightly over with some fine sifted soil, being cautious not to cover them too deep, or they will be liable to perish. As it is probable, the quantity of seed sown may not occupy all the frame, the remainder may have pans of small salading, &c. as recommended Vol. 1, page 578, for nothing permanent can be planted, as in about three weeks, the whole will probably be wanted for transplantation. As soon as the seedling plants are an inch, or an inch and a half high, commence transplanting them about two inches apart, each sort by itself, beginning at that end of the frame previously unoccupied by them; remove the old soil as it becomes cleared of plants, and replace it by new, so that at the end the whole are planted in new soil; then give a gentle sprinkling of water through a fine rose, and finally put on the lights. If the heat of the bed has much declined, put a little lining to the back part of it; when they begin to grow give them plenty of air, and occasionally water as they require it.

Here they may be allowed to remain until the spring frosts are over, exposing them gradually until they are inured to the open air ; then take them up with good balls, and plant them in their proper situations in the flower borders. Some of the half-hardy sorts will flower early in the spring, if sown in pots the preceding autumn ; amongst these may be named, the varieties of ten-week stocks, the different species of *Schizanthus*, and the *Isotoma axillaris*. The latter should be sown in forty-eight sized pots, in September, or as soon as the seeds are properly ripe ; protect them during winter in a dry frame, and keep them clean and free from dampness ; these will come into flower about the end of May. The different species of *Schizanthus* must be treated in a similar manner ; these, however, with the exception of *S. pinnatus*, are not very free at producing seeds, unless some pollen be shook on the stigmas, when in bloom. Ten-week stocks may be sown at the same time, and treated after the same manner. It is not advisable to transplant any of them at this season of the year ; sow but a small quantity in each pot, and when about half an inch high, thin out all the weakest ; for it often happens, when transplanted at this time, they are never able to make good roots again ; and during the dark months of November and December, are almost sure to perish. When they are grown about two inches high, remove a little of the soil from the top, and give them a shallow top-dressing ; this will be sufficient until the following March, when they should be shifted into thirty-two sized pots without disturbing the roots ; in May, turn them out into the borders with the balls entire ; part, however, may be kept to flower in pots, if thought well, and some more may be sown in pots to succeed them at the general sowing in March. The spring sown ten-week stocks also are much forwarded, if transplanted in pots, and afterwards turned into the borders. *Calceolarias* do best when transplanted singly into sixty-sized pots, and turned out at the same time as the stocks.

Treatment of Tender Annuals.---These are sown in pots in February or March, and plunged in a hot-bed, when they are up and have attained one or two proper leaves, they should be pricked out into thimble pots, filled with the compost mentioned in the beginning of this paper ; as they advance in growth, remove them into larger sized pots, until they begin to show blossom, when they may be removed to the houses appointed to receive them. They are divided into two sections :---1st. those which require a powerful heat to make them flower to high perfection, called stove annuals ; and 2nd. such as will flower to perfection with a much less heat, called green-house annuals.

1. *Those requiring strong heat*, as the Globe Amaranthus, (Gomphrena globosa,) Cockscomb (Celosia cristata,) Centroclinium reflexum, Indigofera endecaphylla, Martynia lutea, Cleome rosea, &c. &c. The Globe Amaranthus should be transplanted first into thimble pots, and shifted regularly, until, finally, they are placed in forty-eights, in these they will flower; the soil most suitable is a mixture of peat, loam, and leaf-mould or rotten dung, they should be allowed to stand near the glass, and be subjected to a moist heat of not less than 75 degrees. *Cockscombs* may be grown with strong short stems, and very large heads, if they are allowed to remain in small pots until the flowers are formed, then potted in larger pots, and supplied with as much liquid manure, and moist heat, as possible. Sow the seeds in pots, filled with a compost of three quarters of leaf-mould, and one quarter of sand, and place them in the frame; when they are up, and have become large enough to transplant, pot them singly into sixty-sized pots, adding to the above compost a good portion of rich loam; subject them to a very close humid heat, and by no means allow them to stand further off the glass than one foot and a half, and occasionally syringe them over the head with clear water. When the roots begin to shew themselves through the bottom of the pot, shift them into forty-eights, and let them stand in these until they show flowers; then select some of the best shaped, and pot them in thirty-two's, in a compost of one-half of rich loam, one-fourth of leaf-mould, and one quarter of sand, mixed and broken together, but not sifted; when the roots have grown considerably, shift into twenty-fours, the size they are to flower in; give them a very strong moist heat, and plentifully supply them from the time they show flower with water, in which sheep, fowls, or pigeons' dung is dissolved. When the flowers are come to perfection, give them very little water, which will greatly prolong their beauty. The *Centroclinium reflexum*, *Indigofera endecaphylla*, *Martynia lutea*, *cleome rosea*, &c. will do in any common light soil, provided they receive a good degree of heat in their early growth. After the flowers have come to perfection, they may be placed amongst the green-house annuals, where they will continue to flower throughout the whole summer.

2. *Requiring only a moderate heat*.—Amongst these, the *Lobelia hypocrateriformis*, *Manulea argentea*, *Nierembergia linariæfolia*, &c. require to be potted in sandy peat; the *Salvia foliosa*, *Browallia grandiflora*, *Commelina cucullata*, &c. thrive in a mixture of peat, loam, and a small portion of well rotted dung; *Salpiglossis integrifolia*, *S. linearis*, *Loasa volubilis*, *L. hispida*, &c. do best in a light sandy loam, with a little rotten dung, without any mixture of peat;

Capsicums should be potted in a good rich loam, mixed with about one quarter of peat, and one quarter of rotten horse-dung. Balsams attain to greater perfection, if grown by themselves, under the following treatment, where there are plenty of frames, and one can be spared until towards the end of May: the superior show of flowers that would be obtained, might probably more than repay for the extra trouble and sacrifice. As soon as the plants are fit to remove from the seedling pots, make up a bed of good horse-dung, about three feet thick, and after allowing it to settle a few days, lay about six inches of rotten bark on it. Then transplant the balsams singly into sixty-sized pots, filled with a mixture, of half light sandy loam, one quarter of peat, and one quarter of rotten dung; plunge the pots up to the rim in the bark, and allow a considerable portion of air, by propping up the glasses; shift them into larger pots as often as they require it, each time diminishing the quantity of peat and adding more rich loam, so that at the last potting, (which must be just after they have shewn flower) the compost is nothing more than three quarters of rich strong loam, and one quarter of good rotten dung, give them occasional waterings with liquid sheep manure, and keep a constant brisk heat to their roots until the time they are removed. As the season advances and the plants grow, give a proportionable increase of air, until the beginning of May, the glasses may then be entirely taken off during the day, and merely put on at night to preserve them from frost. By this mode of treatment, a very great number of blossom buds are produced; it will, therefore, be necessary to thin out the weakest as soon as they are formed. If these rules are attended to, and the sort be good, a most splendid show of rich coloured, large double blossoms may be anticipated. We do not wish to convey an idea, that balsams will not grow and flower well under different treatment. We are satisfied they may be brought to flower very well with the common treatment of greenhouse annuals, and perhaps their stems may exceed in size, those grown in the manner we have recommended; but the blossoms will be both inferior in colour, and in many cases scarcely double, although the sort under other treatment might have proved a very excellent one.

SELECTION OF CHOICE BIENNIALS.

Those marked with a Star, are very elegant.

SCARLET AND RED.

Three Inches.

Erythræa aggregata.

One foot.

Dianthus chinensis.

Two feet.

* Ipomopsis elegans.

Four feet.

* Hedysarum coronarium.

PURPLE.

One foot.

- * *Verbena pulchella.*
- * *Eutoca Franklini.*

Eighteen Inches.

- Eutoca multiflora.*
- * *Salpiglossis atropurpurea.*

YELLOW.

Three feet.

- * *Salpiglossis Barclayana.*

Four feet.

- * *Centrocarcha triloba.*

BLUE:

Three feet.—*Echium violaceum.*

SELECTION OF CHOICE AND VERY BEAUTIFUL PERENNIALS.

YELLOW.

Six Inches high.

- * *Onosma stellulatum.*
- * ——— *tinctoria*
- * ——— *rupestre*

Nine Inches.

- * *Cineraria Aurantiaca*

One foot.

- * *Cineraria lævigata*
- * *Dentaria endecaphylla*
- Eschscholtzia californica*

Six Inches high.

- * *Omphalodes verna*
- * *Gentiana clavata*
- Anagallis Webbiana*
- Lupinus lepidus.*

Nine Inches.

- * *Cummingia trimaculata*

One foot.

- Jasione perennis*
- Polemonium humile*
- Lupinus littoralis*
- *laxiflorus*

- * *Eutoca sericea*
- Iris Nepalensis*

Six Inches.

- * *Gentiana angulosa*

*Mimulus rivularis.**Eighteen Inches.*

- * *Hieracium bracteolatum*
- * ——— *longifolium*

Two feet.

- * ——— *lævigatum*
- * ——— *canescens*
- * *Thermopsis fabacea*

*Twelve feet.**Tropæolum tricolorum.*

BLUE.

- * *Aster squamosus*

Eighteen Inches.

- * ——— *pulcherrimus.*

Two feet.

- * ——— *spectabilis*

*Lobelia caelestis**Three feet.*

- * *Pentstemon ovata*
- Linum sibiricum Lewisii.*

Four feet.

- * *Lupinus polyphyllus.*
- * *Aster spurius*
- * ——— *paniculatus.*

PURPLE.

- * *Gentiana utriculosa*

- * *Hedysarum obscurum*

- Nine Inches.*
 * *Gentiana umbellata.*
- One foot.*
 * ——— *altaica.*
 * *Hedysarum consanguineum*
 * *Dentaria polyphylla*
 * *Liatris pumila.*
- Eighteen Inches.*
 * *Malva purpurata.*
 * *Aquilegia Garneriana*
- Two feet.*
 * *Hedysarum alpinum*
 * *Iris amœna*
 * *Stachys pubescens*
- * *Lobelia speciosa*
 * *Dentaria inaxima*
 * *Liatris pileosa.*
- three feet.*
 * ——— *squarrosa*
 * ——— *sphæroidea*
 * ——— *heterophylla*
 * ——— *pycnostachya*
 * ——— *odoratissima*
- Four feet.*
 * ——— *scariosa*
 * ——— *elegans*
- Six feet.*
 * ——— *spicata.*

SCARLET AND CRIMSON.

- three inches.*
 * *Oxalis Deppei*
- Six Inches.*
 * *Abronia umbellata*
 * *Spatalanthus speciosus*
 * *Dianthus barbatus latifolius*
- One foot.*
 * *Aster alwartensis*
 * *Dianthus aggregatus*
 * *Verbena Melindres*
- Potentilla Russeliana*
- Eighteen Inches.*
 * *Geum chilensis grandiflora*
 * *Silene laciniata*
- Two feet.*
 * *Malva Monroana*
 * *Geum chiloense*
 * *Lobelia fulgens*
 * ——— *splendens*

ROSE COLOURED.

- Nine Inches.*
 * *Arethusa bulbosa*
- Eighteen Inches.*
 * *Pyrethrum carneum*
- * *Gladiolus pudibundus*
- Four feet.*
 * *Phlox corymbosa*

WHITE.

- Three Inches.*
 * *Oenothera taraxacifolia*
- Nine Inches.*
 * *Dianthus Libanotis*
 * *Dentaria diphylla*
- One foot.*
 * *Oenothera speciosa*
 * *Milla biflora*
 * *Dentaria trifolia*
- * *Aster humilis*
- Two feet.*
 * *Stratiotes aloides*
 * *Oenothera pallisada*
- Three feet.*
 * *Aster versicolor*
 * *Pæonia Potsii*
- Four feet.*
 * *Lupinus polyphyllus albiflorus*

BROWN.

- three inches.*
 * *Hymerophyllum Wilsoni.*
- Nine Inches.*
 * *Ophrys arachnites*

* *Ophrys speculum**two feet.** *Osmunda spectabilis.*

It will be seen, that, in the foregoing list, we have only selected such plants, as when in flower, make a splendid shew on the borders; in our next, we propose to give a selection of Green-house Biennials and Perennials, for a guide to those who wish to have a choice collection.

JOS. PAXTON.

Chatsworth. Jan. 12th, 1833.

ARBORICULTURE.

ARTICLE V.—ON PRUNING FOREST TREES.

BY GEORGE.

THERE is an error very generally prevalent in terming the Fir, which we see in most plantations, the "Spruce Fir," whilst properly it is only the Fir, or common Fir. * This bears cones five or six inches long at the tops of the trees; the spruce fir, on the contrary, bears cones similar in size to those of the larch, and much after the same manner. The foliage also of the spruce fir is closer, thicker, and rounder than that of the common fir. In North America they distinguish two kinds of the spruce: the black (I think it is) and the red; of these, one, † I am not sure which, is used in making spruce beer, and the common fir is never used for that purpose. Your facetious correspondent, Mr. Howden, vol. 1. page 641, derides the appearance of a tree which feathers down to the ground, he wishes to see such a pyramid set upon a pillar like that of Pompey in Egypt, and in the same spirit he ridicules Lord Bathurst's beautiful lime trees. Where profit alone is to be considered, I have not a word to say against his principle, but to my taste there is not, in a plantation or pleasure ground, a more handsome object than a common fir, thirty or forty feet high, and feathered down to the ground. Where a tree of this kind of growth is desired, a fine healthy one must be selected, and the trees all round it, cut in every year for several years, so that no branch or twig may touch it. Although it will not endure being

* This is the *Abies communis* or Norway Spruce, it differs from the common Fir of North America, which is the *A. alba*—
COND.

† The *Abies nigra* or Black Spruce.—COND.

crowded, yet it will bear being clipped by shears, the same as a yew, proofs of which may be seen in the Duke of Devonshires plantations at Buxton, and from what I have observed there, as well as in several other places, I am satisfied the fir will grow in a swampy situation full as well as in a dry one,

Now for a few words upon the pruning of Forest Trees, as oak, ash, elm, and spanish chesnut, and suppose them to be from six or eight, to 16 or 18 feet high. My rule is first, to trace the leader from the ground to the uppermost twig, I then observe one or two, seldom more, branches which interfere with the growth of the leader, and like certain demagogues would become leaders themselves; these I shorten, by cutting them beyond, or on the outside of a shoot which is sufficiently vigorous, to preserve alive the branch upon which it grows, but not so as ever again to permit it to be a leader. Sometimes one, very commonly two, such amputations suffice to set the leader almost at liberty, and out of danger from any future encroachments upon his prerogative.

Mr. Howden is wrong in condemning Mr. Blakie's foreshortening, and for this reason, viz. that in a young tree where there may be perhaps three or more branches, all of them aspiring to be leaders, you have only the following alternatives: First, to let them all alone, in which case you will have a great bush, instead of a timber tree; Second, foreshorten according to Blakie, leaving upon it a living shoot; or Fourth, cut off close to the trunk; and that this is the worst way of all, I have been long ago certain, and will now endeavour to prove. I think it will in the first place be admitted that in a plantation of twenty or thirty years growth, the best and finest trees will be generally found near the outsides, where their branches have had more room to spread, and their tops have not, during strong winds, been beaten all round by the tops of other trees. If I am right in this conjecture, it would appear that a certain quantity of side shoots or small branches are requisite to secure the quick and proportionable growth of the stem. Now as to the effects of close pruning, suppose a branch of three or four inches diameter to be cut off close to the stem, it will be many years before the wound is covered by the bark, during which time the pores of the remaining part of the branch act as conductors, to carry the wet down into the very heart of the tree below the wound, by means of which decay is soon commenced, and however slow it may be in its progress, it will sooner or later, prove destructive to the timber: and as the lips of the bark continue to increase, and approach towards the centre, so is there more and more, until they nearly touch, a kind of vial formed for

the water to lodge in. But the evil does not stop here, for although in the course of time the new wood will cover the old stump, yet it never unites with it, and whenever the tree is converted into planks, the defect will be visible,

In thinning out plantations, trees may often be found, the limbs of which, have been close cut off some years previous, and the bark nearly or quite grown over; cut one of these across, a few inches above, and also a few inches below the scar, then bisect it longitudinally, putting the teeth of the saw as near as may be upon the middle of the scar: and I am much mistaken, if two or three such specimens, do not serve to cure any man of his fondness for close pruning; and what I contend for, is this; that all the good effects of close pruning, without any of its evils, may be attained by a judicious use of foreshortening.

Some growers of timber are of opinion that trees, whilst they are young, cannot be kept too close, upon the principal that the straightest boles are found in the thickest forests. I think, on the contrary, young plantations should be thinned out every year, or every other year at most; and that as trees advance in growth, more and more attention should be paid to see that their heads have room to play clear of each other, during very high winds, which is a very important time, to examine the plantations and woods of young growing timber.

At Thoresby and Welbeck, in Nottinghamshire, may be seen in certain spots the effects of trees having grown up without thinning. If my memory serves me, there are some, forty feet high or more, with a bole, whose diameter would not exceed a foot. Such trees must, I think be considered as having been irrecoverably drawn up out of their due and natural proportions. It is true that in the above parks, and also at Lord Scarsdale's, at Kedleston, and in other places, may be seen magnificent oaks, several hundred years old, with boles straight as arrows, and with very few side branches, and those of a small size. But I consider these to have been master trees, and such will be found in every young plantation of oaks, they have outgrown their fellows, and have by that means preserved their heads uninjured.

I will conclude this long letter by stating my belief that young oaks of three, four, or five years old, would put up better and straighter stems, if headed close down. We all know that a straight growing Spanish chesnut, can hardly be met with except by this process.

GEORGE.

3rd December, 1832.

NATURAL HISTORY.

ARTICLE VI.—THE MALIGN INFLUENCE OF THE SHRUB BARBERRY,
BERBERIS VULGARIS, ON WHEAT.

BY CÆCILIVS.

PERMIT me to advance a remark, founded on the observation of several persons of extensive agricultural information, respecting the malign influence of the Shrub Barberry, (*Berberis vulgaris*,) on wheat, and although it is not in accordance with the opinion of a distinguished correspondent of the *Horticultural Register* on the subject, I will nevertheless venture to prove satisfactorily, the truth of the assertion, from the following fact. A farmer of considerable landed property, who had repeatedly suffered from what is generally denominated *blight* in wheat, in two particular and adjoining fields, was desirous of ascertaining the cause, if possible, and for this purpose examined the hedge which intersceted these fields, from whence the mischief appeared to proceed; where he found a Barberry bush in great luxuriance, and having previously understood its bad effects as a neighbour on corn, was disposed to consider it was occasioned by the presence of this particular shrub, but least he should be mistaken, and that the evil emanated from some other source, determined that before the sowing of another crop of corn, to have the entire hedge cleared away, which was accordingly accomplished, and by the change, the two fields consequently became one, but the labourers employed in executing the work, when they came to the Barberry, finding it very ornamental, and having received no directions respecting its fate, in particular, left it undisturbed, which circumstance from some inexplicable or unaccountable cause, was not noticed by the owner, until the ground was in course of time, again covered with wheat, and blight had appeared amongst the crop, progressively extending its course, from his former acquaintance the Barberry, like the diverging concentric circles, produced from a stone thrown into a pond. The source or origin of the evil could then no longer be doubted, and the shrub was immediately rooted up and destroyed. Since that period several crops of wheat have been produced on the same spot, without exhibiting the least appearance of blight.

I should therefore recommend every farmer, to be on his guard against this pernicious plant, which frequently grows spontaneously in the hedges, in many parts of the country.

CÆCILIVS.

ARTICLE VII.

COL. BOREY DE ST. VINCENT ON THE ALLEDGED DISCOVERY
OF M. EHRENBURG, RESPECTING ANIMALCULES.

YOUR readers may recollect a notice inserted in the *Register*, vol. 1, page 557, giving the late Baron Cuvier's account of the observations of M. Ehrenberg, on animalcules, which were supposed to overturn the prevalent belief among naturalists in spontaneous generation. Colonel Bory de St. Vincent, who has been a microscopic observer of reputation for more than thirty years, has recently published the following remarks on the labours of M. Ehrenberg, which I shall here translate.

"Hitherto it has been believed that the *Infusoria* are extremely simple in structure, but many years researches have convinced the German naturalist, M. Ehrenberg, that they are all endowed with a very complicated organization. In certain species of these animalcules, he alledges that a mouth at least is observable, as well as a stomach; in many there are even more than fifty stomachs, which can, independently of each other, be filled and emptied. Müller had supposed these stomachs to be embryo eggs (ovules) or perhaps other Infusoria, still smaller than the animalcule which had swallowed them. M. Ehrenberg tells us of a very simple method of proving the contrary of this: he colours with various substances, such as indigo and carmine, the water in which the Infusoria live, and he has observed that in about one or two minutes they fill one or more of their stomachs, with the coloured fluid. According to this observation the Infusoria are nourished through a mouth, and not, as had been believed, by simple absorption. M. Ehrenberg, in a word, with a sort of precision that carries a certain school, to make out the natural statistics of things, upon which we have the most incomplete data, informs us in what proportion the genera and species of Infusoria are distributed, if not over the surface of the globe, at least over the thirty degrees of latitude, he has travelled over, in a small part of the surface of the ancient world."

"Now it has been long published that the *Microscopica* are almost the same in all the waters of the universe, according as these waters are fresh, salt, or consist of infusions. I think it is not yet possible to render their geographic distribution more precise. As to the stomach of monads, I must persist in doubting it, and I remain in the persuasion derived from the observation of thirty years, that the *Gymnoda*, among other animalcules are nourished by absorption. The internal globules (*interanica* of Müller) cannot be stomachs; no

magnifying power demonstrates the communication of these globules with the exterior; they are besides exceedingly moveable, and change their place in every possible way, passing forwards and backwards, with the least movements of the animalcule in which they are distinguished, so that if they had any communication with the surface, by the minutest tube imaginable, solid but at the same time capillary, all these intestines would become knotted in inextricable confusion."

"I am further, as Müller was, very certain that several of the larger species swallow others, and again cast them up after retaining them for a time in their interior. I have seen some of these very small, enter, remain, and issue out from the bodies of the larger species, without my having lost sight of them for a single instant, and without their appearing to be dead. I have also coloured, not only the Microscopica, but those of a still higher order, the hydras, or fresh water polypi, and it appeared to me that it was solely the molecule, and never the internal globules, or alledged stomachs which became tinged. An experiment can easily be made in which nature seems to be left at liberty, in the spring and autumn, when the green matter penetrating the oyster beds, (les pares d'huitres) and the stagnant water of the water butts of our suburbs, in which case not only the Microscopica become coloured, but the Entomostraca, and the oysters. I am quite certain that the species of the genus *Ophthalmoplanis* are not Monads after dinner, and I would as soon take the characteristic internal globule for an eye as for a stomach."

"As to eyes, I may add, that if M. Ehrenberg, has really discovered them in many of my genera, particularly in the *Megalotrochiæ*, he must needs remove these genera from the class of Infusoria in order to elevate them in the scale of organization, one of the characters of the class Microscopica, being, according to me, the absence of organs for concentrated vision."

"To conclude, amongst all the figures in the work of the German Naturalist, which I have now before me, I have not found a single species there engraved, that is not met with in the vicinity of Paris. Almost all of them indeed have been previously published, a circumstance, however, which in no way detracts from the merits of the author."

I may remark upon these contradictory views of the German and the French Naturalist, that M. Bory, de St. Vincent, may from long habit, be so prejudiced in favour of the system he has adopted, as to prevent him from forming an unbiassed opinion on M. Ehrenberg's views.

JAMES RENNIE.

Lee, Kent, January, 28th. 1833.

ARTICLE VIII.

THE STUDY OF THE SCIENCE OF BOTANY.

BY F. F. ASHFORD.

(Continued from Volume II. page 79.)

THE next part of the vegetable which comes under consideration is

Fructification—by which we are to understand both the flower and fruit of plants, which cannot well be separated, for though the rudiment or first beginning is in the flower, of which it properly makes a part, Linneus defines the fructification to be a temporary part of of vegetables, allotted to generation terminating the old vegetable and beginning the new, it consists of seven principal kinds, viz.

1 Calyx, empalement or flower cup, the termination of the cortex, or outer bark of the plant, which after accompanying the trunk or stem through all its branches, breaks out with the flower, and is present in the fructification in this new form. Its chief use is to inclose and protect the other parts; it is of seven kinds, viz :

1 Perianthemum, flower cup, when its station is close to the fructification. It is either

- a P. fructificationis, when it includes the stamina and germen.
- b P. floris, containing the stamina without the germen, or
- c P. fructus, containing the germen but not the stamina.

2. Involucrum, a cover, when stationed at the foot of a umbel, at a distance from the flower. This is either

- a I. universale, standing under the universal umbel. Or
- b I. parziale, standing under the partial or secondary umbel.

3 Amentum, a catkin, when it proceeds from one common receptacle, resembling the chaff of an ear of corn.

4 Spatha, a sheath, when it bursts forth lengthways, and puts forth a spadix, being either

- a S. univalvis, of one valve, opening on one side.
- b S. dimidiata, halved, the inner one covering the fructification, on one side, and the outer one on the other.

5 Gluma, husk in grasses, when it folds over with its valves, and the sharp point or beard issuing from it is called an arista.

6 Calyptra, a veil in mosses, where it is placed over the anthera and is hooded like a monks cawl, being either

- a C. recta, straight, every where equal.
- b C. obliqua, oblique, bent on one side.

7 Volva, from its involving or enfolding, as in the mushroom tribe (Fungi) where it is membranaceous, and rent on all sides, being either

a V. *approximata*, close to the head.

b V. *remota*, at some distance from the head.

It is sometimes difficult to distinguish a calyx from a floral leaf (Bractea) such as is found to accompany the fructification of the Lime (*Tilia*) Lavender (*Lavendula*) and others. They may be discovered by this certain rule, that a calyx always withers as soon as the fruit is ripe, if not before, but the bractea will remain longer. Without attending to this, mistakes might easily be made, in *Helleborus*, *Nigella*, *Passiflora*, *Hepatica*, *Peganum*, and others in which the calyx is wanting. The Bractea is either

1 Colorate, coloured. 2 Caducæ, falling off with

3 Decidua, falling off. the flower.

4 Persistentes, abiding. 5 Coma, terminating the stalk

above the flower distinguished by its magnitude or colour.

2. Corolla, petals, the termination of the liber, or inner bark of the plant continued to, and accompanying the fructification in this new form of painted leaves. Its use is the same as that of the calyx, serving as an inner work of defence for the parts it encloses. The leaves of which the corolla consists are called petals, which is defined by Linnaeus to be a corollaceous covering to the flower, inclosing and protecting it in the manner of a wreath. The Corolla is either

1 Monopetalous, consisting of one petal, of two parts, viz.

a Tubus, the lower part of a monopetalous flower, or

b Limbus, the upper part of a monopetalous flower expanded, which, according to its figure, is either

Regularis, of an equal figure : *Irregularis*, disproportionate.

Inequalis, corresponding in proportion to one another.

Globosa, globe-shaped. *Infundibuliformis*, funnel shape.

Campanulata, bell-shaped. *Rotata*, wheel shaped,

Hypocrateriformis, salver shaped.

Ringens, gaping, irregular with two lips.

Cancava, hollow. *Patena*, spreading.

2. Polypetalous, of many petals, each consisting of two parts, viz.

a Unguis, a claw, the lower parts of a polypetalous flower.

b Lamina, a thin plate, the upper spreading parts of a polypetalous flower.

A polypetalous corolla is either.

a *Cruciata*, cruciform, having four equal spreading petals.

b *Composita*, compound, having many florets in a common peri-

antherum above the common receptacle.

c Ligulata, tongue-shaped.

d Tubulosa, florets that are all tubular and equal.

e Radiata, when the florets are tubular in the disk, and radiate and ligulate in the margin.

f Papilionacea, butterfly-shaped, irregular, consisting of

Carina, keel, the lower petal, often in form of a boat.

Vexillum, standing, the upper petal ascending.

There belongs also to the corolla, a part called the Nectarium. (Honey gland.) It has been by former botanists contounded with the petals; but according to the definition of Linneus, it is the part which bears the honey, and belongs to the flower only. These parts afford a wonderful variety in the manner of their appearance; in some plants they are very large, as in the *Narcissus* and *Aquilegia*; in the former of which, the cup, and in the latter, the horns are Nectaria: in others, it is scarcely discernible, even with glasses: its use is not known, unless the supposition of its secreting the honey may be depended upon. It is either

a Proprium, when it is a distinct part from the petal.

b Petalinum, when inserted into the petal.

c Calcariate, such as resembles a calcar or spur.

d Calycine, such as are found upon the calyx.

e Stamineous, such as attend the stamina.

f Pistillaceous, such as accompany the pistillum.

g Receptaculaceous, such as are joined to the receptacle.

F. F. ASHFORD.

Rode-Hall Gardens, Lawton, Cheshire, Oct. 1832.

COLLECTIONS AND RECOLLECTIONS.

ARTICLE IX.

PRESERVING PLANTS ON A SEA-VOYAGE.—I observe in Vol. 1, page 736, of your valuable *Register*, an explanation of the best method of sending plants home for distant countries; but you omit to mention one very important point, to the neglect of which more than to any other cause, I ascribe the death of the plants which so commonly takes place. The plants are unusually taken up any how, put into a box, and sent home, in fact they are badly moved,

and transplanted at the moment of being shipped; they ought on the contrary either to be sown in the pots or boxes which are to be sent home, or moved into them some months previous to shipping, and allowed to make roots before they are sent on board. Having had occasion to send to the West Indies some plants, I have followed this practice with invariable success; and I strongly recommend it to general attention, more particularly to those who send plants from other countries to this. The best method I have yet hit upon is a common flower Barrel with the top out, in the bottom of which the pots are firmly fixed by a bar across the top of the pots. A few bars of wood are put across the upper end of the Barrel, and a piece of tarpaulin is nailed to the side of the Barrel, like a flap to cover the top in very hard weather. I have also made a few holes with a large auger in the sides, to prevent the possibility of the plants being entirely secluded from air.

MULBERRY.—You mention an anecdote (page 709) of the vivacity of the mulberry tree, I will give you another. Many years ago, a large branch, as big as a man's thigh, was blown off a very favourite old mulberry tree, when the tree was in full leaf; it was planted immediately, leaves, branches, and all, and it is now a fine thriving plant, making strong healthy wood every year. The greater part of the old wood is dead, but some portion still remains alive, while the new wood and bark are constantly forming round the old; and in the course of a very few years, the tree will consist of a coat of new wood embracing a core of old, of four or five inches diameter. The old mulberry tree was afterwards blown down, and continued to make buds and shoots as it lay on the ground with other timber for several years.

MR. SHERBORNE'S ORANGES.—I am very glad to read you an article on the cultivation of the Orange tribe, and beg to inform you, that Mr. Sherborne, the acting Partner in the plate glass manufactory, St. Helen's, near Liverpool, has greatly distinguished himself in this act. His conservatory is a perfect grove, and his mode of management, I believe, quite peculiar, as it certainly is beyond all others, successful. I wish he would let his gardener send you an article.

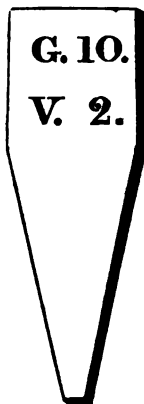
DECIDUOUS CYPRESS.—Perceiving that mention is made of the Cypress as a useful tree, I beg to call your attention to that most beautiful of all trees, the Deciduous Cypress. There is a very fine one near a pond at High-gate. There are two very good ones just beyond Uxbridge, on a little island in the river, below the mill.—There are two capital plants, at Ambresbury, in Wiltshire, close by

the side of the river. All this shews they are fond of moisture, (as, indeed, is the fact in America,) and points them out as the best and most ornamental plants which any gentleman can use, who is forming a pleasure plantation in a dampish soil, or on the banks of a river. A mistake has generally prevailed upon this subject I suppose, for I cannot, in any other way, account for the neglect of so beautiful and hardy a plant.

THOMAS DEE.

LABELS FOR PLANTS.—Not having seen any plans in the *Horticultural Register* of labels for plants, I take the liberty of submitting one (fig. 15.) to your notice; it is particularly adapted for plants in pots, as it is exceedingly *unobtrusive*, but I know not whether it may be already known to you. It is a piece of lead about two inches in length, and sloped nearly to a point from three quarters of an inch in diameter. In order to mark them, I got steel types, as I may call them, made; they are about four inches in length, and have a numeral at the bottom, with which I mark the lead by the blow of a hammer, and I intended to have three letters G. S. V. cut on three more types. I mark the lead thus, on one side G 10. V. 2.; on the other side S. 1, S. V. 1.: that is, Genus 10, Species 1, Variety 2, Sub-variety 1. I get the labels made for one shilling per hundred, the types for sixpence a-piece; twelve in all with G. S. V. 1, 2, 3, 4, 5, 6, 7, 8, 9, 0.

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H. L. T.

FINE SPECIMEN OF COCKSCOMB.—I send you an account of a Cockscumb, (*Celosia cristata*) grown by me, at the Right Hon. Lord Southampton's, Whittlebury Lodge, Northamptonshire; it was exhibited at the Northamptonshire Horticultural Show, July 27th, 1832, and also at the Buckingham Horticultural Show, on the 31st of July. The flowers measured thirty-two inches over, fourteen inches in length, and eight inches in width. It now (Oct. 12th, 1832) measures thirty-six inches and a half over, fourteen inches and a half in length, and eight inches and a half in width. It is a very handsome shaped comb, and is of a brilliant scarlet colour.

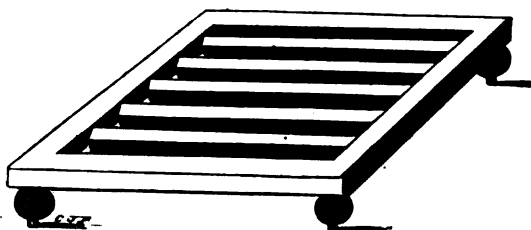
J. OXLEY.

HYDRANGEA HORTENSIS.—The method of treating the Hydrangea by Mr. Brown, gardener, at Stoueleigh Abbey, is simple and successful. Summer cuttings of young wood, are struck under a common hand-glass, and afterwards potted off singly into small pots, or several into larger pots, and kept through the winter in the green-

house, till it is seen by the end of the shoots which will flower; they are then potted into strawberry-sized pots, (thirty-two's) in a mixture of peat and loam for flowering. Mr. Brown has them to flower beautifully, when the plants are very small.—JAMES BROWN, Jun.

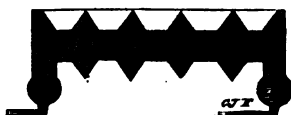
A DESCRIPTION OF A GARDEN-SCRAPER.—The following is a figure and description of a garden-scraper, (Fig. 16) made of hard wood, which is found to answer exceedingly well. I understand,

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they have been long known on the Continent, perhaps they may have been seen by some of your readers, but as they have never been noticed, either in your *Register*, or the *Gardeners' Magazine*, I thought it best to send a figure, being satisfied, that if they were known, they would be more generally adopted in this country. Fig. 17, is a section, 1, 2, 3, 4, are the bars fixed in

17



a frame about two feet long; the bars are one inch thick, by two inches deep, and are placed about two inches apart, so that the gravel falls through betwixt the bars. It might be made of cast-iron, the bars being hollow.

M. SAUL.

LEVICK'S COMMANDER IN CHIEF DAHLIA.—The engraving of Mr. Levick's New Dahlia, inserted in the *Register* of last month, is, I think, a very imperfect delineation.* It is a very splendid flower indeed, and as you may not have seen it in bloom, I hope this description will not be unacceptable. It grows about six feet high, and is a most abundant flowerer. No Dahlia, I am acquainted with, will produce more in one season, and none or scarcely any of the flowers are ever hid in the foliage: the colours are the most lively I ever saw, the ground colour is bright scarlet, richly striped with dark maroon, occasionally the latter forms the ground colour of the flower; when this is the case, the flowers are striped with scarlet mixed with flames of a fiery orange, but the former are the prevailing colours. It is a very double variety, seldom or ever producing a single or semidouble flower. It was raised in 1831, and took the first prize in the Sheffield Horticultural Meeting of that year, and again in 1832; and a drawing of it was taken by Mr. Thos. Gray, of Pitsmoor.—J. REVELL.

* Although we had never seen the plant in flower, yet we were satisfied from the accounts of it given to us by our friends, that it was a very splendid variety.

PART II.

REVIEWS AND EXTRACTS.

REVIEW.

INTRODUCTION TO BOTANY.

BY J. LINDLEY, ESQ. F. R. S.

Illustrated with numerous Engravings on Wood, and Six Copper Plates, 8vo. 18s.

Two hundred and ninety nine years ago, when Leonhart Fuchs, a learned physician, of Tubingen, published a work of four folio pages, Botany was nothing more than the art of distinguishing one plant from another, and remembering the medical qualities which experience, error, or superstition ascribed to them. It now comprehends not only the knowledge of the names, and uses of plants, but of their external and internal organization, and of their anatomy and physiological phenomena; it embraces a consideration of the plan upon which those multitudes of vegetable forms that clothe the earth, have been created, of the skilful combinations, out of which so many various organs have emanated, of the laws that regulate the dispersion and location of species, of the influence that climate exercises upon their developement, and the various ways in which the laws of vegetable life, are applicable to the augmentation of luxuries and comforts, or the diminution of the wants and miseries of mankind.

The principles of such a science must necessarily be extremely complicated, and in certain branches, which have only for a short time occupied the attention of observers, or which depend upon obscure or ill understood evidence, are by no means so clear, and defined, as could be wished. To draw a distinct line between what is certain and what is doubtful, is one of the objects of this work. Another is to demonstrate by well connected proofs, that the greatest harmony is manifest in the vegetable kingdom, and show that the most important phenomena may be distinctly explained by a few simple laws of life and structure. In the execution of these objects Mr. Lindley has followed the method recommended, by the celebrated professor De Candolle. How well able the author is to explain the science of Botany, it is needless to say, the work before us speaks for itself: such a mass of facts, laws, arguments, rules, inferences, &c. relating to the study of this science, in so simple and perspicuous a manner, have never before appeared in the shape of a single volume, but were only attainable at an amazing expense; and even then the substance was hid in a number of large books, which

required no small portion of a persons life to properly judge, and digest their contents ; we, therefore, are inclined to think, this excellent "Introduction," will, in a little time become the text book of all Botanists, nearly to the exclusion of every other.

The author has divided his work into seven parts called books, the first of which treats on Organography, or an explanation of the exact structure of plants. Under this head we will just notice a remark, page 21. "An irritability of a curious kind has been noticed by Malpighi in the fibre of a spiral vessel in herbaceous plants and some trees, especially in the winter. A beautiful sight may be observed, by tearing gently asunder a portion of a branch or stem, still green, so as to separate the coils of the spires ; the fibre will be found to have a peristaltic motion which lasts for a considerable time. An appearance of the same nature has been described by Mr. Don, in the bark of *Urtica nivea*." Book 2nd—Vegetable Physiology, or the history of the vital phenomena that have been observed both in plants in general, and in particular species, and also in each of their organs taken separately. Under this head, page 250, when speaking on leaves, he says, "respiration takes place by the power the leaves possess of inspiring and expiring oxygen, and decomposing carbonic acid. They have been found to vitiate the atmosphere at night, by inhaling oxygen abundantly, and exhaling a small quantity of carbonic acid ; and to restore the air to its purity in the suns rays, by decomposing their carbonic acid, and parting with their oxygen."

Book 3rd.—Taxonomy, or some account of the principles of classification ; comprehending not only an account of the various methods of arrangement employed by Botanists in their systematic works, but an explanation of the principles by which the limits of genera and species are determined. After this comes

Book 4th—Glossology, or as it was formerly called, Terminology, being an explanation of the terms used in Botany. Book 5th—Phytography, or an exposition of the rules to be observed in describing and naming plants. Page 440, "in drawing up a description, care must be taken that every term is used in its strict sense ; that all is perspicuous and free from ambiguity, and that the different parts are described in their just order, beginning with the root and ending with the fruit."

Book 6th—Geography, or a summary of the little which is known of the laws that regulate the distribution of plants upon the surface of the earth. Finally, the book concludes with an exposition of what is called Morphology—(Book 7) or the metamorphosis of the organs of plants ; a subject which is in the vegetable, what comparative anatomy is, in the animal kingdom. Thus far have we been led in describing what appears to us an admirable work, and we trust from what has been stated, our readers will be able to judge of its merits. We assure them we conceive it worthy of being generally recommended.

FLORICULTURAL INTELLIGENCE.

NEW AND VERY RARE PLANTS, Figured in the Periodicals for February, 1833.

CLASS I.—DICOTYLEDONOUS PLANTS, OR EXOGENES.

APOCYNÆÆ.

BEAUMONTIA GRANDIFLORA.—Large flowered Beaumontia.—A climbing shrub, in its native country of vast extent. Flowers very fragrant, large, bell shaped, white or cream coloured, and of a somewhat leathery texture, resembling the *Brugmansia (Datura) arborea*. Native of Eastern Bengal, where it grows at Chittagony and Sylhet, as it does also at Noakote, in Nepaul. It was introduced in 1818 by Dr. Wallich.—*Bot. Mag.* Culture.—It is a stove plant and should be planted in rich light soil or loam and peat, it strikes from cuttings in a moist heat.

SCROPHULARINÆ.

CALCEOLARIA INTEGRIFOLIA VISCOSISSIMA.—Very viscid entire-leaved Calceolaria. Flowers yellow, changing when dried to a full reddish-orange. An hybrid, raised by Mr. Cameron, at the Birmingham Botanical Garden.—*Bot. Mag.* Culture.—We suppose it requires the greenhouse, should be planted in rich light mould, and may be propagated by cuttings.

COMPOSITÆ.

CINERARIA TUSSELLAGINIS.—Coltsfoot Cineraria. An Annual, growing about a foot high. Flowers large, lilac-purple, handsome. Raised at the Birmingham Botanical Garden, from seeds sent from the Island of Teneriffe, where alone it appears to be a native. Culture.—It requires the warmth of the greenhouse, and perhaps may be found in summer to blossom freely in the open air.—*Bot. Mag.* The soil should be light and sandy; it is propagated by seeds.

LOACEÆ.

LOASA PLACEI NOV. VAR.—Mr. Place's New Loasa.—An herbaceous plant, three to four feet high. Flowers yellow, rather small for the size of the plant. Seeds were sent to the Glasgow Botanic Garden, from Aconcagua in Chili, by Dr. Gillies. It differs from the true *L. Placei* of Mr. Lindley, as figured in the Botanical Register, 785, in its shorter and broader leaves, and more obtuse and shorter lobes, and in the smaller flowers.—*Bot. Mag.* Culture.—It will flower in the open borders in light sandy soil, and may be increased by seeds.

SOLANÆÆ.

SOLANUM RUNCINATUM.—Runcinate-leaved Nightshade. An herbaceous plant with purple flowers. Native of Chili, whence it was introduced in 1832, by Mr. Hugh Cumming. Culture.—It succeeds well in common garden soil, and is easily increased by cuttings or suckers, which it sends forth in abundance.—*Sweet's Flower Garden.*

LOBELIACEÆ.

LOBELIA COLORATA.—Red-leaved Lobelia. A showy perennial hybrid, with azure-blue flowers, tinged with purple. Most probably derived from the intermixture of *L. coerulea*, and *cardinalis*. It formed part of a collection of plants, received by Mr. Dennis, from North America; it is highly ornamental, and well

deserves a place in the flower-garden. Culture.—A light soil, composed of sandy loam and peat, appears to suit it best; it may be increased by parting the roots, or by cuttings.—*Sweet's Fl. Gard.*

LOBELIA MUCRONATA.—Sharp-pointed Lobelia. A perennial, with bright crimson-flowers. Native of Chili, whence it was introduced by Alex. Cruckshanks, Esq. Culture.—It flowered last year in the greenhouse of the Glasgow Botanic Garden, but may probably be hardy enough to bear the open air. The soil should be sandy loam and peat, and the plant may be increased by division of the roots.—*Bot. Mag.*

ACANTHACEÆ:

CRYPTOPHRAGMIUM VENUSTUM.—(*Justicia venusta* of the Bot. Reg. 1380.) Stately Cryptophragmium. A handsome shrub, flowers very rich purple, growing in large panicles. It was discovered in the mountains of Pandua on the eastern boundary of India, and cultivated in the Calcutta Botanic Garden in 1825, whence Dr. Wallich introduced it to the English gardens. Culture.—It requires the stove, should be potted in sandy loam and peat, and may be propagated by cuttings.—*Bot. Mag.*

RUELLIA OBLONGIFOLIA.—Oblong-leaved Ruellia. This is a native of Brazil; introduced by the late Robt. Barclay, Esq. Flowers purple-rose coloured. Culture.—It requires the stove, is propagated by cuttings, and should be potted in light loam.—*Bot. Cab.*

MYRTACEÆ.

MELALEUCA FRASERI.—Mr. Fraser's Melaleuca. A lowly shrub, bearing flowers of a delicate rose colour. Received at the Glasgow Botanic Garden, from the late Mr. Fraser, Colonial Botanist, at Sydney, New South Wales, under the name of *M. genistifolia*, but is evidently distinct from that species.—*Bot. Mag.* Culture.—It will thrive in the greenhouse, should be potted in sandy loam and peat, and may be propagated by cuttings.

ERICÆÆ.

AZALEA PONTICA VERSICOLOR.—Changeable Pontic Azalea: A beautiful hybrid, raised at Highclere; its blossoms are produced in large clusters, and the variation of tint caused by each corolla, being diversified with bright yellow, rose of different shades, and white, gives the bush an air of richness that is hardly to be excelled.—*Bot. Reg.* Culture.—It is hardy, grows freely in peat and loam, and may be propagated by layers.

EPACRIDÆÆ.

LEUCOPOGON PARVIFLORUS.—Small-flowered White-beard. This is the *Styphelia parviflora* of Andrews' Bot. rep. 287. Flowers small, white and hairy. The plant was raised from New Holland seed, received by Mr. Low, Clapton Nursery.—*Bot. Reg.* Culture.—It is a greenhouse plant, requiring to be potted in peat and loam, and may be propagated by cuttings.

LEGUMINOSÆ.

GOMPHOLOBIUM CAPITATUM.—Capitate Gompholobium. This was raised in the Nursery of Mr. Knight, King's Road, Chelsea, from seed of the Collector Baxter. Mr. Cunningham first discovered it in 1822 in bushy forest-ground, on the hills around Oyster harbour, King George's Sound. Flowers deep yellow, growing in clusters or heads.—*Bot. Reg.* Culture.—It requires the greenhouse, should be potted in sandy peat, and may be increased by cuttings.

CINCHONACEÆ.—*Lindl.*

RONDELETIA SPECIOSA.—Beautiful *Rondeletia*. (Fig. 18.) This brilliant plant is a native of the Havannah, whence Messrs. Loddiges received it through W. J. M'Leay, Esq. in 1830. There is a figure in Jacquin's *Americana*, which he calls *R. odorata*, closely resembling this, possessing the fragrance of violets,

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RONDELETIA SPECIOSA.

but this has not the slightest scent. The flowers are orange-red, and exceedingly rich; they grow in corymbs, and make a most striking appearance, being quite as splendid as *Ixora coccinea*, if not more so. Culture.—It requires the stove, and should be potted in loam and peat; it may be increased by cuttings. —*Bot. Cab.*

Affinities of the Order.—This Order is nearly allied to Compositæ, from which its distinct stamens, bilocular (two-celled) or plurilocular (many celled) ovary, and inflorescence, distinguish it; and consequently it participates in all the relationship of that extensive group. From Apocynæ the æstivation* of the corolla, the presence of stipulæ, and the inferior ovary, distinctly divide it; yet, according to Mr. Brown, there exists a genus in equinoctial Africa, which has the interpetiolar † stipules ‡ and seeds of Rubiacæ, and the superior Ovary of Apocynæ, thus connecting these two Orders. A tribe called Opercularinæ, referred here by Mr. Brown, and others, is remarkable for having but one seed, and the number of stamens unequal to the lobes of the corolla, and occupies an intermediate position between genuine Cinchonacæ and Dipsacæ. The present Genus *Rondeletia* is placed under the tribe Hedyotideæ, Plumier gave the Generic name in memory of William Rondelet, a scientific Physician, whose attention was chiefly occupied by fishes and algæ.

Geography of the Order.—Almost exclusively found in the hotter parts of the world, especially within the tropics, where they are said to constitute about one-twenty-ninth of the whole number of flowering plants. In America, the most northern species is *Pinckneya pubens*, a shrub inhabiting the Southern States of North America; the most Southern is *Nerteria depressa*, a small herb found in the straits of Magellan. The Order is represented in Northern regions by *Stellatæ*.

Properties of the Order.—Powerful febrifugal § or emetic properties, are the grand features of this Order; the most efficient products of which, in these two respects, are Quinquina and Ipecacuanha. The febrifugal properties depend upon the presence of a bitter, tonic, astringent principle, which exists in great abundance in the bark; those of Cinchona are known to depend upon the presence of two alkalies, called cinchona and quina, both of which are combined with kinic acid; two principles which though very analogous, are distinctly different, standing in the same relation to each other as potassa and soda. Three species of Cinchona, the *C. ferruginea*, Vellozæ, and Remijiana, are found in Brazil, where they are used for the same purposes as the Peruvian bark, to which, however, they are altogether inferior. A kind of fever bark is obtained at Sierra Leone, from *Rondeletia febrifuga*. Besides these, a great number of other species possess barks, more or less valuable; *Pinckneya pubens* is the fever bark of Carolina; *Macrocnemum corymbosum*, *Guettarda coccinea*, *Antirhea* and *Morinda Royoc*, are all of the same description. A lightish brown, bitter, and powerfully astringent extract, called Gambeer, is obtained at Malacca, by boiling the leaves of *Nauclea Gambeer*; it is sometimes substituted for Gum Kino. A decoction of the leaves as well as root of *Weberia tetrandra* is prescribed in India in certain stages of flux, and the last is supposed to have anthelmintic || qualities, though neither have much sensible taste or smell. The bark and young shoots are also used in Dysentery. Amongst the emetics, Ipecacuanha, a little creeping-rooted half-herbaceous plant, found in damp shady forests in Brazil. Coffee is the roasted seeds of a plant in this order, *Coffea arabica*, and is supposed to owe its characters to a peculiar chemical principle

* Disposition of either the calyx or corolla when in the bud, before expansion.

† Between the Petioles, or leaf-stalks.

‡ Scales, or uncertain leaves, usually two, at the base of the leaf-stalk.

§ Efficacious in moderating fevers.

|| Is capable of killing worms.

called Caffein. The part roasted is the albumen, which is of a hard horny consistence: and it is probable, that the seed of all Cinchonaceæ or Stellatæ whose albumen is of the same texture, would serve as a substitute.—*Lindl. Outl. Nat. Sys.*

CLASS II.—MONOCOTYLEDONOUS PLANTS OR ENDOGENES.

XYRIDÆ OR JUNCÆ.

XYRIS ALTISSIMA.—Highest Xyris. This Rush is a native of New Holland, whence it was sent to the Cambridge Botanic Garden; its leaves and flower stalk are six or seven feet long, whence it has its specific name: the flowers are yellow, coming singly in succession. Culture.—It requires the greenhouse, and should be potted in sandy peat earth.—*Bot. Cab.*

ORCHIDÆ.

BRASAVOLA PERRINU.—Perrin's Brassavola. Flowers bluish white. Plant native of Rio Janeiro, whence it was received by Mrs. Arnold Harrison. It is named after Mr. Harrison's Gardener, (Mr. Perrin) under whose skilful management the collection of Epiphytes at Aighburgh, has arrived at a state of great perfection.—*Bot. Reg.*

EPIDENDRUM HARRISONIÆ.—Mrs. Harrison's Epidendrum. Flowers large, of a pale delicate green, whitish in the centre. Native of Brazil, where it was detected by Mr. Wm. Harrison.—*Bot. Mag.* Culture.—It should be potted in turfy peat mixed with a portion of rotten wood, and must be kept constantly in the stove.

BLETIA ACUTIPETALA.—Sharp petaled Bletia. Supposed to be the *Leinodorum altum* of Jacquin. Flowers pale rose colour. Native of South Carolina, whence it was received at the Liverpool Botanic Garden. It may possibly be the *B. (Cymbidium) verecundum* of the North American Authors.—*Bot. Mag.* Culture.—We suppose it will need the greenhouse, will require to be potted in loam and peat, and may be increased by division of the roots.

ASPHODELÆ.

SCILLA VILLOSA.—Hairy-leaved Scilla. A bulbous plant, with pale lilac blue flowers. Native of Tripoli, where it was gathered by Mr. Dickson, and by him introduced to this country. Culture.—It will, no doubt, bear cultivation in a warm border in the open air; the soil should be sandy loam.—*Bot. Mag.*

ON RAISING SEEDLING RANUNCULUSES.—About the middle of October, and the latter end of January, are the best times; and at the latter time, they will succeed without any protection by glass, but they should be defened from heavy rains when very young, and from scorching suns at all times, until they begin to fade, which will be in June. They should be taken up in July, and planted the ensuing February, in the same manner as old roots. Seed from semi-double flowers, rarely produce one good flower in five hundred; but gather seeds from the best old flowers, impregnated with semidoubles possessing good properties. Let all who attempt to raise seedling Ranunculuses utterly destroy all slugs which harbour about the boxes, and if the boxes become infested with small brown insects, scarcely visible to the naked eye, except when in motion. Apply tobacco smoke. and repeat it until they are totally extirpated.—*Rev. Joseph Tyso. Gard. Mag.*

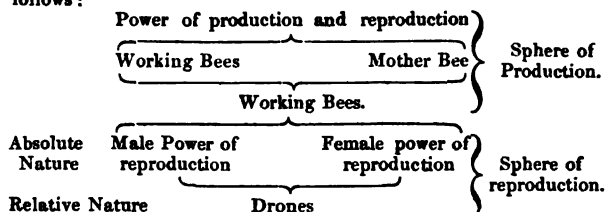
ON THE PROPGATION AND CULTURE OF ROSES.—The following roses are said to flower more freely, and with larger, better filled double blossoms, when budded

on brier stocks, than when on their own roots: *Rosa centifolia* Sultana, *R. hollandica maxima*, or *La Duchesse de Grammont*, and *Rosa unica carnea*, and *R. pimpinellifolia*. The following sorts should be worked on *Rosa semperdorens*, on which they will bloom early and abundantly: *R. muscosa*, and its several varieties; *R. unica*, *R. centifolia sulphurea*, and *R. nigra vera*.—*M. Stiehler, Prus. Gard. Soc.*

CULTURE OF THE BLUE HYDRANGEA.—*M. Fintelmann* considers it clear that the blue colour of the flowers of the *Hydrangea* is owing to the presence of iron in the soil: sometimes the iron is found in peat earth, and sometimes in loam or sand. To make sure of blue flowers, he recommends the mixture with soil of a small quantity of iron filings, or of rust of iron in any form; say about one twentieth part.—*Prus. Gard. Soc.*

NATURAL HISTORY.

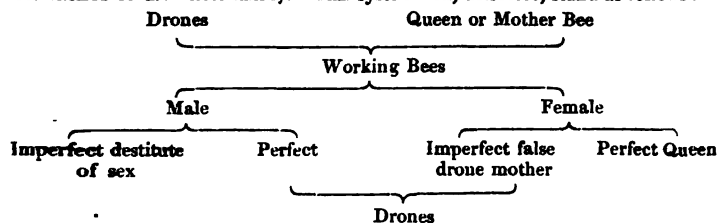
ON THE POWER OF THE COMMON BEE TO GENERATE A QUEEN.—(*Continued from page 89.*)—From the system of *Heinmetz*, and that of *Harold*, another theory was raised by *Privy Counsellor Voigt*, in *Schwarzbach*, near *Culmbach*; and *Precentor Lucas*, in *Nischwitz*, near *Wurzen*. According to their system, the Queen is the real mother of all the bees; laying, during eight months of every year, an almost incredible number of fructified eggs; from which in twenty or twenty four days, the common working bees are bred, which in their sexual character, are both male and female. The males by means of their mouth fructify not only the Queen, but also their sisters, the common female bees or mother drones: and from the eggs laid by the latter, in the month of May or June, the drones are actually bred. The fructification or vivication of so many thousand eggs is wholly performed and executed by the principle of life, or by the animating creative spiritual power, the *aura seminalis* contained in the spittle, which may be considered as the vehicle of it, and the process of which is so very visible in the frequent application of the proboscis of the common male bees to that of the Queen. This system may therefore be considered as follows:



For the truth of this system, an appeal is made to experience, which shows that common bees, with a queen, can compose a perfect hive, without a single drone being considered necessary.

This system, however, did not long hold its ground; the obscurities which distinguished it induced *Heumann* to suppose that he could remove those obscurities and according to his system, the queen is the only actual mother of her like;

she is also the mother of the bees and the drones, laying in the course of a year many thousand eggs. The bees are the nurses, who are to co-operate in the breeding, and without their assistance the eggs prove abortive. They have it however in their power to effect the development of the female egg, in the following manner:—In the small cells the sexual property is lost, and it becomes a common bee; in the royal cell it becomes a queen, or a most fruitful mother; and in the drone cell, a spurious mother drone. The male egg in the cell of the common bee becomes a bee devoid of sex, and in the drone cell, a drone, as the sole father of the whole family. This system will, therefore, stand as follows:



Although this theory found considerable support, yet it was by no means considered sufficiently explicit. Professor Hummel attacked it most violently, on the principle that it was at variance with every analogy of nature, to invest an insect with the power of altering the sexual character of a egg after its deposition, and to impart a power which did not belong to it in its original nature. It is, however, not the least interesting part of the study of the bee, that this apparently insignificant insect has hitherto baffled all the research and ingenuity of man to discover the manner of its propogation; analogy presents no guide to the solution of their secret, and the result of every anatomical experiment has tended rather to mystify the subject than to conduct us on the road to truth.—*R. Huish, Esq. Mag. Nat. Hist.*

PART III.

MISCELLANEOUS INTELLIGENCE.

I.—QUERIES AND ANSWERS.

PRICES OF PLANTS, &c.—I think on reference you will find that you are wrong in supposing you could not answer the query put by an *Amateur*, at page 765, as to the selling price of *Pæony* Roots per dozen, on account of the advertisement duty. Without the name of the seller, the tax does not apply. At page 747, you mention the selling-price of a book. C. C. C.

VINES IN POTS.—Allow me to ask, if I can succeed in growing grapes in pots under a common frame, without any artificial heat; and if so, whether the Black Hamburgh would be proper for the purpose? A Subscriber in Shropshire.

Without doubt the Black Hamburg would ripen well under proper treatment, but a further reply as to the mode of management in a future number, COND.

PROPAGATION OF DOUBLE CAMELLIAS BY CUTTINGS.—I have not yet seen an explanation of my query, with respect to the propagation of double Camellias by cuttings.

NATURAL ORDERS.—Perhaps in one of your future numbers, you would give the commencement of a list of the plants that are ranged under every order according to the Natural System of Jussieu, as I have perceived many alterations in the placing of plants; for instance, you have put the Camellia into a new order, or rather have constituted it an order, although Loudon in his Encyclopædia of Gardening ranges it under "Aurantæ:" also "Ribes" which you have made (page 663) one of the "Grossulariæ" but which he puts under "Cactæ:" also Tropæolum, (page 663,) &c. &c. &c.

LIST OF PLANTS AND CULTURE OF THE IRIDÆ.—Would you, or some of your correspondents, give a selection of Roses, Tulips, Auriculas, Ranunculuses, Carnations, Polyanthus, Gladiolus, Amaryllis, &c. &c. &c. Also the culture of the natural order "Iridæ," and also "Asphodeleæ" and "Hemerocallideæ," in the same concise and excellent way, in which your correspondent "Arthur" has done that of "Amaryllideæ."

M. SAUL'S DAHLIA STAND.—A short time since, I showed your correspondent Mr. Saul's description of a Dahlia, &c. Stand, to a *cast-iron manufacturer*, who told me, that pieces of cast-iron of the length and *thinness* of that mentioned, would be as brittle as glass.

I am, &c. &c. H. L. T.

DAPHNE PONTICA ROSEA.—With you, or any of your correspondents, do me the favour to inform me of the proper method of treating the Daphne Pontica rosea. And also of the best time and manner of sowing the seeds of the Rhododendron and Azalea. An answer to these enquiries at your earliest convenience, will oblige

DAPHNE.

December 10th, 1832.

POLISHING STONES.—I should be much obliged, by your inserting in an early number, some easy and effective means of polishing stones. If any of your correspondents will give a favourable answer, they will greatly oblige your humble Servant,

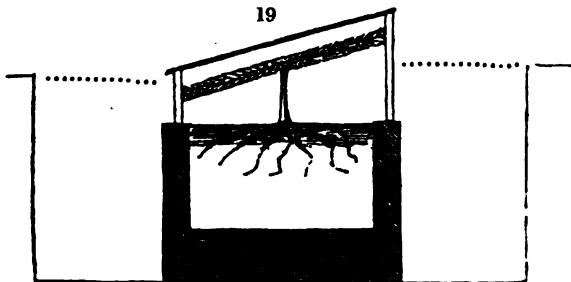
C. E. A. A Lover of Nature. (See p. 90, of the present Vol.)

TALC.—In reply to your correspondent, Vol. 1, page 427; and your own request, page 846. I can inform him, that he may procure what he is in search of, at Mawe's, in the Strand, or any other of the Mineralogists; but he will find it too high in price, to admit of being made available for any Horticultural or economical purposes, whether if there were a demand for it in quantities, it might not be obtained at a far cheaper rate, I am not prepared to say, but deem it more than probable. It is, however, Mica, not Talc, which he must mean. The former is perfectly transparent, flexible, and elastic, and occurs often in large masses, which split into thin smooth lamellar plates. It is found the most abundantly in Siberia, where it is used instead of window glass. Talc is not nearly so hard, yielding to the nail, and though flexible is not elastic; is greasy to the touch, and generally far less transparent than Mica. It occurs in Aberdeenshire, Bauffshire, and Perthshire; but the finest specimens are brought from the Tyrol. Sparry Gypsum was made use of in ancient times for windows. The blue clay of England affords it; and in the beds of Gypsum, in the Paris basin, I have found it perfectly transparent, (which it often is) and affording large and perfect plates.

J. C. K.

UNIVERSAL FRAME.—I beg to acknowledge the satisfaction I felt in perusing the article on the uses of a two-light frame in volume 1, page 577, of the *Hort. Reg.* The idea having been originally thrown out by myself, I feel bound to trouble you with a few more questions on points that are not quite clear, in order that I may be able to follow your directions explicitly, as I doubt not many others will. You have not stated how thick the wood-work of the frame ought to be, nor by how much the height of the back ought to exceed that of the front. On a reference to Mr. Waldron's plan, page 399, you will see he has not stated in words how high his turf walls ought to be carried, and by the diagram, (19) a line drawn parallel with the surface of the ground will bring the lower part of the glass flush with the lining, if, as he says, "the remainder of the trench is filled up with manure, &c. &c." besides, would not the fruit, grapes especially, be always in perfect darkness? if this be a correct plan of the frame, &c.

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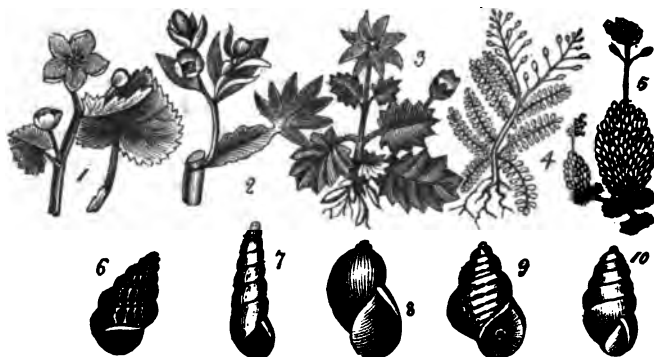
Shall we not have to step over about a yard of deep manure all round the frame before we can get at it? My chief ambition is to have flowers and melons, but I fear that the latter cannot be left to the vicissitudes of the weather so soon as July, however I shall not mind having a new frame made to use according to Mr. Waldron's plan if I can understand it better. I have made myself a light 4 feet by 3, glazed with six inch square glass, after Mr. Harrison's recommendation, and although I got very bad glass, and am a bungling artist, its appearance surprises and pleases every body; even the glazier, who when I shewed him the plan at first, and wished him to do it, flatly refused to have any thing to do with "such a stupid concern." I have also made a paper frame according to honest old Abercrombie's directions, in page 331, of the "Every Man his own Gardener," the melons under it (the seeds of which I procured from Mr. Harrison) look much better than those a month older in a glass frame. J. T. C. F.

The wood work of the frame should be $1\frac{1}{2}$ inch thick, the front 14 inches high, and the back 2 feet. The turf walls would undoubtedly be better if built up to nearly the top of the pit, perhaps that was Mr. Waldron's intention. It is at all events indispensable that the frame be elevated sufficiently for the glass to be above the lining in the pit. In going to the frame a person would, of course, have to step over the dung, but if a board or two were laid on it, any unpleasantness would be prevented, and they would also tend to keep in the heat of the lining. Our kind friend "G. I. T." has sent us some packets of excellent melon seeds for distribution, a few papers of which are still in our possession, if any will be acceptable, and J. T. C. F. will inform us in his next, how they are to be conveyed, we shall be happy to send a few.—COND.

II. NATURALISTS' CALENDAR, OR OBSERVATIONS ON NATURE FOR MARCH.

THE copious rains of February, though well adapted for making the roots of perennial plants send forth shoots, would be unfavourable if continued, for the germination of seeds, which require to be moist, but not soaked to spring well. It is this which renders dry weather at this season so valuable; when wet weather continues during this month, seeds are apt to fail by becoming mouldy or by rotting, whereas when they are got in dry, they are more certain to germinate vigorously. Self-sown seeds for the same reason, seldom produce such fine plants as those reared from seeds which have been carefully dried, and kept out of the ground during the winter; self-sown flowers soon lose all the beauties acquired by cultivation, and return to the character originally belonging to them in their wild state.* Very many British plants are now in perfection, a few of which we will describe. The common Marsh Marygold (*Caltha palustris*) fig. 1, will about the third week be observed opening its yellow flowers on the margins of ponds and rivers, and in marshy meadows every where, particularly if the soil be adhesive. The flower buds, gathered before they expand are said to be a good substitute for capers; and the juice of the petals boiled with alum dyes paper yellow. In thickets and waste ground, where the soil is chalky, the Bears foot (*Helleborus foetidus*) fig. 2, flourishes, it bears greenish flowers, and grows about $1\frac{1}{2}$ foot high, This plant has been long in use in popular medicine, as a vermifuge (worm destroyer) and cathartic (purge.) All the Hellebores are violent poisons, and require great caution in their application to any use. The Pile wort (*Ficaria ra-*

20



nunculoides) fig. 3, begins to expand its yellow flowers about the second week, it is not very plentiful, but may occasionally be found on banks under the shelter of hedges and in moist grass land. The young leaves are sometimes used in Sweden as greens; and the roots were formerly used in our own country as poultices for piles, it generally grows about six inches high. A little annual about 3 inches high with small white flowers, may be found on limestone rocks, and walls, particularly in the south, it is the Mountain Dittander, (*Hutchinsia petraea*) fig. 4; also the Whitlow grass (*Draba aizoides*) fig. 5, grows upon many rocks in the south, but is most abundant on the Welsh mountains, it is about three inches high, and bears small yellow flowers:

* Notes of a Naturalist.

YELLOW COLOUR OF PLANTS.—The yellow of the petals of flowers, is the only colour which is not discharged by the fumes of sulphureous acid. If a lighted match be held under a flower (*viola tricolor*) for example, the purple tint will instantly disappear, but the yellow will remain unchanged: the yellow of a wall-flower (*Cheiranthus peticulosus*) will continue the same, though the brown streak will be discharged.*

BIRDS.—We noticed in our last calendar, that most of our winter visitors, as the Siskin, Fieldfare, &c. had disappeared. On the day our last number was published, we observed a large flock of the former; they were flying a considerable height, and appeared to be going direct south. The blackbirds (*Merula vulgaris*) and thrushes, (*Turdus musicus*) have sung very loud during greater part of the past month, and we should judge by their manners are beginning to breed, although we have not yet met with a nest. Towards the end, but few of our winter visitors will remain, and several of the summer birds will then have arrived. The Chiff Chaff, (*Sylvia Rufa*, Ren.) is usually amongst the first, and may be heard uttering his peculiar cry, in small copious; the Wheat-ear (*Saxicola* (*Enanthe*)) also generally makes its appearance this month; it is, in general, very plentiful in the high Peak of Derbyshire.

MOLLUSCOUS ANIMALS.—In the plains about Penzance and other places in Cornwall, that very beautiful shell, *Bulimus articulatus* (6) abounds, it is about $\frac{1}{2}$ of an inch long, and $\frac{1}{4}$ broad, colour whitish and glossy, with rows of plain brown chain-like spots, resembling figures of 8 linked together, the animal feeds on grass. The *Achatina octona* (7) is about half an inch long, of a white horn colour; it is ranked amongst British shells, on the authority of Dr. Pulteney, but is considered a doubtful species, we know nothing of the habits of the animal, nor can we tell where it may be found; but another little reddish horn coloured shell, not more than half an inch high, and a quarter broad, must have been observed by most of our readers, who in their morning rambles have passed through marshy ground, or have been engaged in their daily employ, near stagnant pools, or other situations abounding with the *Nymphaea*, &c. on the leaves of which it generally abounds, this is the *Succinea oblonga* (8.) The little animal feeds upon these plants, as may be seen by the numerous small perforations in the leaves and stalks. In hedges and under stones, in most places, where the soil is sandy, may be found the *Cyclostoma elegans*, (9) it is about half an inch long, and four tenths wide, of a purplish yellow, mostly purple at the tip, marked with two rows of purplish brown spots; 'tis probable the animal feeds on the different herbage growing in the situations where it is found. In woods, particularly in Worcestershire, the *Bulimus tuberculatus* (10) may often be met with, it is about half an inch long, and one quarter broad, and varying in colour from milk white to brownish white.

FISHES.—A fish in the egg or spawn, gains its oxygen from the air dissolved in water, and those fishes that spawn in spring and summer in still water, such as the pike, carp, perch, and bream, deposit their eggs upon subaquatic vegetables; the leaves of which, in performing their healthy functions, supply oxygen to the water. The fish that spawn in winter, such as the salmon and trout, seek spots where there is a constant supply of fresh water, as near the sources of streams as possible, and in the most rapid currents, where all stagnation is pre-

* Field Naturalists Magazine.

vented, and where the water is saturated with air, to which it has been exposed during its deposition from the clouds. *

INSECTS.—Several species of butterflies and moths appear towards the end of the month, as the Small Copper Butterfly, (*Lycæna Phlæas*) the Spring Usher Moth, (*Anisopteryx leucophearia*) &c. &c.; Bees also begin to leave their hives to collect honey. It is interesting to remark, that how far soever they may wander, (and a mile or two is not uncommon) they always find their way home: this has been by many supposed to be done by the insect's memory, in retracing all its wanderings. Instead, however, of this tedious process, bees uniformly fly from great distances directly to the hive, as straight as a ball from a musket, and with extreme rapidity. But in departing from the hive upon an excursion, they, for the most part, begin by examining the flowers in their immediate neighbourhood. †

SOLITARY BEES.—Those who are desirous of witnessing the disclosure of some of the early solitary bees, should repair during a sunny morning to some warm sand bank, with a southern exposure, where they are almost certain of being gratified, with seeing some of these (*Anthophora retusa*, &c.) breaking through the clay walls, with which the mother bee had, the preceding season, so carefully enclosed them. ‡

METEOROLOGY.—The atmosphere is supposed to extend to the altitude of about forty-five miles; if this be correct, a column of that length presses upon all bodies on the surface of the earth equally in every direction, and with a force or weight amounting to nearly 15 pounds upon every square inch. Variations in atmospheric pressure are continually taking place. The greatest degree of pressure appears to be exerted during the months of February and June, and the least during the three latter months of the year. These variations appear to furnish additional evidences of the aqueous origin of atmospheric air. §

EVAPORATION.—The immense evaporation proceeding from the earth, even in the hottest seasons, supplies the air constantly with moisture; and as every square foot of this element can sustain 11 grains of water, an abundant provision is made for every demand. The continual escape of moisture from one body, and its imbibition by another, this unremitting motion and circulation of matter, are parts of that wonderful ordination, whereby the beneficence and wisdom of providence are manifested; without the agency of evaporation, no vegetation could exist, no animal life continue. ||

SUNSHINE.—It will be seen by the table given last month, page 94, that the average quantity of sunshine per month in 1832, was about 119 hours, or nearly four hours on an average each day. It is stated, page 95, that we had less sun during January this year than in that of 1832. However, after our Calendar went to press, we had a few pretty clear days, which quite turned the balance in favour of the present year, as will be seen by the following statement.

1833.	Morning.	Afternoons.	Total.	Aver. Daily.
January	12 h. 36 min.	21 h. 30 min.	34 hrs. 6 min.	1 hour 6 min.

Eight hours, fifty-two minutes, more sun in the afternoon, than morning, during the month.

* Sir Humphry Davy.

† Notes of a Naturalist.

‡ Notes of a Naturalist.

§ Domestic Gardeners' Manual.

|| Journal of Nat.

III. LIST OF NEW & BEAUTIFUL FLOWERING PLANTS THIS MONTH.

AT MESSRS. YOUNG'S, EPSOM.

STOVE.		
<i>Begonia ciliata</i>	<i>Spiranthes</i>	<i>Kennedia</i>
<i>ulmifolia</i>	<i>elata</i>	<i>longiracemosa</i>
<i>Blandfordia</i>	GREENHOUSE.	<i>Muraltia</i>
<i>nobilis</i>	<i>Canarina</i>	<i>stipulacea</i>
<i>Bletia hyacinthina</i>	<i>campanula</i>	<i>Heisteria</i>
<i>Brunfelsia</i>	<i>Dryandra</i>	<i>Polygala</i>
<i>uniflora</i>	<i>cuneata</i>	<i>nummularia</i>
<i>Calanthe</i>	<i>Erica aspera</i>	<i>Samolus</i>
<i>veratrifolia</i>	<i>dumosa</i>	<i>littoralis</i>
<i>Cereus anrantacus</i>	<i>fragrans</i>	<i>Ulex provincialis</i>
<i>Dendrobium</i>	<i>furfurosa</i>	HARDY.
<i>Picardi</i>	<i>Lawsoni</i>	<i>Cyclamen</i>
<i>Imatophyllum</i>	<i>lea</i>	<i>vernum</i>
<i>Aitoni</i>	<i>mucosoides</i>	<i>Coum</i>
<i>Justicia guttata</i>	<i>scabriuscula</i>	<i>Soldanella</i>
<i>Lycopodium</i>	<i>superba</i>	<i>montana</i>
<i>stoloniferum</i>	And 50 other kinds.	<i>crenata</i>

IV—MONTHLY HORTICULTURAL CALENDAR.

FOR MARCH.

VEGETABLE DEPARTMENT.

Artichokes.—Lay on a good dressing of dung, and dig and level the ground betwixt the plants.

Asparagus.—Plant in hotbeds for the final crop, towards the end fork and spring dress the productive beds, and plant new ones, see vol. 1, p. 432.

Beans.—Sow Longpods and Windsors in drills 4 feet apart, twice in the month, and plant out those sown in boxes.

Beet.—Sow the main crop of large rooted, and a small quantity of white and green for their leaves.

Brocoli.—Sow some of Grange's Early White, to produce in August; also the Impregnated Early White, and Early Sprouting, to come in from October to Christmas, and towards the end some of the large headed Purple, Sulphur-coloured, Spring White, and late Dwarf Purple, for use in March and April next year.

Cabbages.—Towards the end, sow a good supply of the different sorts for use in the autumn, and plant out from the winter beds to come into use in June; also sow some of the Red Dutch for use next winter.

Carrots.—Sow a few of the Early Horn on a warm border, in the beginning, and the main crop of Orange and Altringham, in shallow drills, nine inches apart, about the middle in rich deep soil.

Cauliflower Plants wintered in frames, should be planted out 2 feet 6 inches apart; about the middle sow some seed to produce heads in June and July.

Celery sown last month prick out on a slight hot-bed covered with rich soil, and sow more seed on a warm border.

Cucumbers for ridges, and successional frame crops should now be sown in the hot-beds.

Garlic and Shallots should be planted in drills fifteen inches apart, and six inches in the drill.

Horse Raddish.—New plantations of it should now be made.

Kidney-Beans.—Continue to sow for forcing.

Leeks.—Sow the common, and London Flag for a main crop.

Lettuces.—Sow the different sorts twice during this month.

Onions.—Sow the main crop early in this month, if not done in the last.

Paranips.—Sow the Guernsey and hollow crown sorts for a main crop, if not done before.

Peas of all kinds may be sown at different times for succession.

Potatoes about the middle, plant 'early kidneys, Early Manley's, Fox's seedling, &c. for the principal early crops.

Raddishes.—Sow in the beginning good crops of scarlet, and towards the end a few turnip rooted.

Sea Kale.—Sow the seeds upon good rich soil, any time during the month.

Turnips.—Sow a few of the Early Dutch, about the twentieth.

Spinach.—Sow the round-seeded about once a fortnight.

Winter Greens.—Sow Savoys, Brussel Sprouts, Curled Kale, &c. towards the end of the month.

Herbs of different kinds, should now be sown, and new plantations of mint, &c. made.

Small Salading must still be sown in pans or boxes.

FLOWER DEPARTMENT.

Annals for a selection of the finest sorts, see p. 30; for their culture, see p. 110.

Auriculas, if not top-dressed last month, should now be done as speedily as possible.

Dahlia Roots should now be potted or plunged in a little old red tan in the stove, to forward them for planting out.

Polyanthus seed should be sown as early as possible, if not done, and the old plants top-dressed.

Ranunculuses should be planted early in the month.

Roses in pots, now brought into the forcing-houses, will flower the beginning of May.

Tulip beds should now be examined, to see if any parts of the leaves or bulbs are cankered, take off the part affected, and leave the wound exposed to the sun and air, and it will presently heal.

Pelargonium Cuttings should now be put in small pots, and placed in a hot-bed frame.

Thunbergia grandiflora, if now introduced into the stove, will produce a good supply of cuttings. Page 68.

FRUIT DEPARTMENT.

Vines in Pots now brought in, will ripen their fruit early in July. Grapes should be well thinned when they require it, and the young shoots of the vines kept neatly tied in.

Cherry Houses.—Give abundance of air night and day, until the fruit is all set, keeping the same temperature, as recommended last month. After being set, gradually increase the heat.

Strawberries in Pots continue to bring in once a fortnight.

Peach Houses.—If the fruit is set, let the range of the thermometer be from 65 to 75 degrees during the day, with abundance of air, and from 60 to 65 during the night.

Peach and Nectarine Trees on the open wall, should now be pruned and nailed.

Protect Wall Trees as they come into blossom, with canvass or woollen netting,

THE HORTICULTURAL REGISTER.

APRIL 1ST, 1833.

PART I.

ORIGINAL COMMUNICATIONS.

HORTICULTURE.

ARTICLE I.—ON TRAINING PEACHES AND NECTARINES.

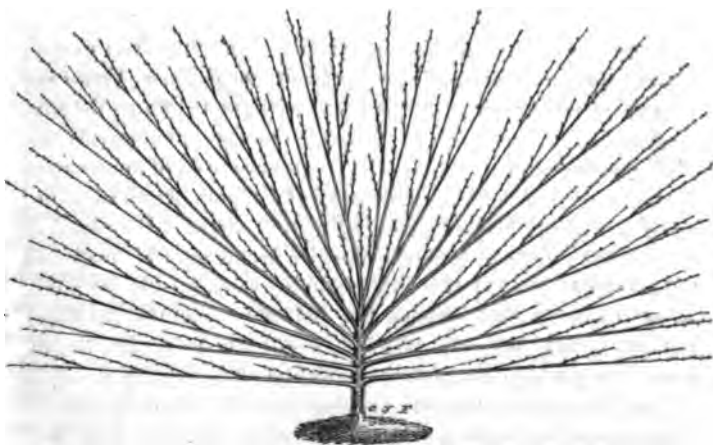
BY MR. HENRY DYSON.

I REJOICE to see a continuation of remarks on training fruit trees on walls, occupying a portion of the *Horticultural Register*, I trust the advocates of the improved system, will continue to discuss the subject until the tottering fabric of the old fan system is universally exploded, together with its confused heterogeneous mass of unnecessary branches, pinching the fruit of their needful supply of nourishment; causing many to sicken, and fall, before they arrive at the period of stoning; and those which remain to ripen comparatively small and inferior. Under the old method of training we frequently see a display of shreds of every glaring hue and colour, and this not being sufficiently odious, they are commonly cut double the needful length, and the nails left protruding from the wall at all lengths, from one to nearly three inches; a most preposterous sight!! On Mr. Seymour's plan the shreds are selected, to match the colour of the branches they are intended to secure, cut short as circumstances will admit, the nails driven up to half an inch, and so concealed at the back of, or beyond the branches, as to make them quite imperceptible at the distance of the width of the border. The mind is apt to cling to fallacies, particularly if they are pleasant to contemplate, and is too

ready to resist any attempt to disabuse it, however pernicious the error may be ; yet truth is always beneficial, even when unpalatable, and they are our best friends who force us to receive it. In answer to my former remarks on training &c. Vol. 1, page 675, there are two ostensible objections to my statement by Mr. H. ; the first, is of that equivocal character as renders further explanation unnecessary : with regard to the second objection, namely " that Mr. Seymour's trees have rugged protuberances similar to the spur of a pear tree." In vindication of the system of Mr. Seymour, and also of his particular trees, I feel obliged, though very reluctantly, to observe that such statement must have originated in misconception.

From your correspondents' observations, I find several individuals have formed erroneous conclusions of Mr. Seymour's system, by devoting too much of their attention to the rough skeleton outline of the rudiments of such trees as have been previously exhibited, and paying too little regard to the descriptive method of training by which they are accompanied. I have, therefore attempted to give a more accurate outline of a tree on this system, (Fig. 21) one of six years standing, and I lament that it is not in my power to display its beauties on paper, in any degree equal to its natural appearance on the wall.

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I have lately had the superintendence of young trees on the plan here delineated, and have often witnessed with delight, the magical effect produced on visitors by their simultaneous uniformity. Trees on this system may be trained semi-circular, elliptical, horizontal

or in any other form to suit the taste of the gardener, and will answer well in any of those forms with good management and proper attention.

In several circuits I have lately made through portions of the respective counties of York, Nottingham, Derby, Chester and Lancaster, my attention has been partially and painfully directed, to the delapidated condition of trained wall trees, which in many instances were not only devoid of all system, but of all order, and only calculated to disfigure the walls they were intended to adorn. The same kind of negligence prevails in gardens, where cultivation in other respects is praiseworthy in the highest degree. To name is always invidious, and I would not presume to refer thus generally to the management of others, were it not in the hope of stimulating the ideas of junior gardeners to increased exertions in this department of their profession.

I presume it will be admitted by every one devoted to horticultural pursuits, that the highest attainable perfection in training wall trees, consists in an uniformity of figure, the most exact proportion, and equal distribution, of productive wood over its entire superficial extent, combined with the most conclusive evidence of health and vigour. In regard to these particular considerations, trees trained on the plan of Mr. Seymour bid defiance to all competitors.

22

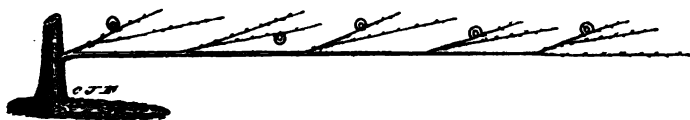


Figure 22 represents a branch of a tree on this system in the beginning of June with its fruit bearing laterals, and its successional ones secured under or over them, according to circumstances, or as to the particular point from whence they struck. For the forthcoming season by being tied close at the base with matting or tape, and sufficiently tight not only to place it in juxta position, but also to bruise the bark of the young shoot, thereby causing a callosity, and an obstruction to the free ascension of the sap, and occasioning a predisposition for the young shoot to strike the next coming season, at that identical point. The laterals are frequently confined in their exact position on the wall by an hempen string attaching them to the main branches, and also to nails well driven up, and this plan is preferable to shreds for the laterals, inasmuch as it occupies less space, is less obtrusive on the eye, and is equally efficient.

In writing on this subject I have boldly avowed my opinions, some of them I am apt to imagine are purely original, and having written for the purposes of information and elucidation, I will willingly answer any interrogatories that may be required; and so far as I may be mistaken, shall be most happy to submit to proper correction from whatever quarter it may proceed. Every thing I see, every word I hear, and every sentence I read in reference to this subject, all tend to confirm the conviction before expressed, "that Mr. Seymour's system is so perfect, it need only be seen and understood to be universally adopted throughout Great Britain."

HENRY DYSON.

Doncaster, Jan. 22, 1823.

ARTICLE II.

ON THE CULTIVATION OF WALNUTS IN CASHMERE.

COMMUNICATED BY I. T.

From the Manuscript Papers of the late Mr. William Moorcroft, Published in the Second Volume of the Journal of the Royal Geographical Society.

THERE are four varieties of Walnuts in Cashmere, called Khanuk-doono, which is wild; Wantoo, Doonoo, and Kaghzee, which are cultivated. The Khanuk-doono, or forest walnut, is diminutive, with a very thick hard shell, and small proportion of kernel, so firmly engaged in narrow compartments with strong partitions, as not to be worth the trouble of extricating. The nut of Wantoo is a little larger; but the shell cannot be broken, except by a sharp blow from a stone or a hammer; nor can the kernel be got out, except with difficulty. The nut of the Doonoo is somewhat larger still, its shell thick, but in a less degree; the kernel large and good, and is readily extracted. The Kaghzee is so called from its shell being almost as thin as paper. It admits of being broken by the pressure of the hand, is the largest of the whole; and its kernel is also large, and easily removable.

It is not known whether the Wantoo and Doonoo were originally distinct varieties, and have acquired their character from cultivation; but it is reported, that the Kaghzee owes its superiority to having been engrafted; the practice of engrafting being, however, at present generally discontinued, from a knowledge of this variety being re-

produced from the seed alone, without degenerating. The nuts steeped in water for eight days, are planted in the beginning of March, and the shoot makes its appearance on the surface of the soil, generally about forty days afterwards. If the proprietor thinks proper to engraft the trees, the process is performed when the plant is five years old, by the method, if I mistake not, of stock-grafting. The head being cut off horizontally to a convenient height, is partially slit or opened in its circumference, and three or four scions are introduced into distinct slits, and retained firmly without the aid of any binding; but clay mortar, worked up with rice husks, is put round it, and kept from being washed away, by being enveloped in broad strips of birch bark.

In Cashmere, the Walnut-tree begins to fruit when seven years old, and two or three more years elapse before it is in full-bearing. This is conceived to be the case when, in a single tree, the average annual number of nuts brought to maturity, amounts to about twenty-five thousand. It has been observed here, that after a few seasons of full-bearing, walnut-trees fall off in producing fruit, and run with great luxuriance to leaf and branch, to which condition the Cashmeres apply the appellation of *must*; and to remedy it, cut over the top branches, bringing the tree to the state of a pollard. During the year following, shoots and leaves alone are produced, which are succeeded by a crop of fruit in that ensuing, so abundant as to compensate for the absence of nuts in the preceding year; and, in a few years, when the yield becomes less considerable, the process is repeated, and always with the same success. The cut ends of the branches swell into knots or knobs, which are somewhat unsightly, and of which the structure has not been accurately examined.

Cashmere is, probably, indebted to accidental observation, rather than to previous reasoning, for the introduction of this useful practice, for it has not induced the adoption of the same, in regard to other fruit trees. The hazel, as far as it has fallen under my observation, is here so luxuriant in the production of arborage, (leaf and branch,) that it rarely brings to perfection its nuts, scarcely of the size of peas, hidden within the long husks of large clusters; nor has any attempt been made, as in the walnut, to improve their quality by grafting or pruning. The vine scales the summit of the poplar, and is never restrained by pruning, though compared with it; those of Europe, either on trellis, or on the wall, sink into insignificance.

The walnuts which fall green, furnish the material for a colour of the same tint, which, however, is not permanent; but the husks of the ripe fruit are sold to the dyers, for the basis of a fixed black.

When ripe, the fruit of the Wantoo walnut is retailed in the city for eating, at the rate of a hundred for two pice, or about one penny ; the nuts of the Doonoo in the same number, for three pice, and of the Kaghzee for four pice, or two-pence. The country people break the walnuts at home, and carry the kernel alone to market, where it is sold to oil-pressers, at the average rate of seven rupees, per khurwar or ass load. About twelve thousands ass loads of walnut kernels are annually appropriated to the oil-press in Cashmere, producing in the gross return of oil and oil-cakes 1,13,000 rupees, independently of the nuts eaten by man. Walnut oil is preferred to linseed oil, for all the uses to which the latter is applied ; and in Cashmere as on the continent of Europe, is employed in cookery, and also for burning in lamps, neither much clogging the wick, nor giving much smoke. It is, however, inferior both for cooking, and for burning to the oil of til.* (Sesâmun.) Walnut-oil is exported to Tibet, and brings a considerable profit. It is somewhat extraordinary, that a tree which furnishes timber durable and handsome, and a nut which yields a valuable oil, should not be more cultivated in Britain. According to ancient custom, in Cashmere, the crop of nuts was equally divided between the government and the owners of the tree ; but at present, the former takes three-fourths, leaving but one-fourth to remunerate the farmer ; yet under this oppression, the cultivation of the walnut is extensive : and Cashmere, in proportion to its surface, produces a much larger quantity of nuts than any portion of Europe. The horse-chesnut is wild in the forests, and has not been reclaimed ; but its fruit is said to be largely used in Chumba for feeding hogs.

I. T.

* This oil possesses such qualities, as fairly entitles it to introduction into Europe ; and if divested of its mucilage, it might, perhaps, compete with oil of Olives, at least for individual purposes, and could be raised in any quantity in British Indian provinces. It is sufficiently free from smell, to admit of being made the medium of extracting the perfume of the jessamine, the tuberose, narcissus, camomile, and the yellow rose. The process is managed by adding one weight of flowers to three weights of oil, in a bottle which, being corked, is exposed to the rays of the sun for forty days, when the oil is supposed to be sufficiently impregnated for use.

ARTICLE III.

ON PROTECTING THE BLOSSOMS OF WALL FRUIT TREES,
FROM FROSTS, BLEAK-WINDS, &c.

BY MARK REYNOLDS.

Gardener to John Cooke Yarborough, Esq. Campsount, near Doncaster.

AFTER a careful investigation of your valuable *Horticultural Register*, I find no mention made of protecting the blossoms of wall fruit-trees, from frosts and winds in the spring months, except in page 19, Volume 1, which I conceive must be an expensive method. I have ventured, therefore, to send you the detail of a method we practice here, which is found to answer perfectly well. As soon as the blossoms show the least inclination to burst or unfold, poles are placed upright five feet apart, and two feet from the bottom of the wall, sunk a little in the border, and the top fitting under the coping. Then having a quantity of hay or straw bands well twisted to any convenient length, commence nailing the first band on the top of every pole, the second band ten inches from the first in the same parallel direction, and so proceed until within two feet of the ground. Only two seasons trial of this simple protection has convinced me, together with some of my neighbours, that it is as effectual as any kind of netting, commonly used for that purpose; and should the green fly (*Aphis*) make its appearance, it is easily annihilated, by using a few gallons of tobacco-water with a common garden syringe. Two or three dressings are sufficient. About the second week in May, when the bands are thoroughly dry, take off every other of them, and in a few days after, clear the whole away, and fold them up; if they are kept dry, they will last for three seasons: the poles put under a shed, will last a great number of years. The nails used are garden nails, which, when drawn, may be again used for summer nailing. Let it not be supposed, that I lay claim to originality, for ought I know, it may have been practised many years ago, in some parts, but not generally, to the extent it deserves.

The tobacco-water is purchased at the manufactory for about eight-pence per gallon; five gallons are sufficient to clear a wall from insects, of one hundred and fifty yards long. In preparing it for use, add to every gallon of good tobacco-water, five gallons of pure soft-water, it may then be used with safety, two hours before the sun leaves the wall.

MARK REYNOLDS.

Campsount, January 23rd, 1833.

ARTICLE IV.

ON THE CULTURE OF RHUBARB, WITH SOME ACCOUNT OF ITS
HISTORY AND INTRODUCTION INTO THIS COUNTRY.

BY JOSEPH PAXTON, F. L. S. &c.

History.—THE first species of Rhubarb cultivated in this country, was the *Rhèum rhapónticum*; it is a native of Asia; but by whom it was introduced is unknown. The ancient Greeks called the root of commerce "*Rhabarbarum*," because it grew plentifully on the banks of the river Rha, (Volga) in Russia. The Greeks, however, of more modern times, changed its name to "*Barbáricum*," because it was brought to Barbary for sale. The species so much in use at that time, has till lately been generally believed to be the *R. palmátum*; but Mr. David Don has satisfactorily proved it to be the *R. australe*, of Mr. Don's "*Flora Nepalensis*," and the *R. Emodi* of Dr. Wallich. It is, however, very probable, that the roots of various species are used, as the bark of various species of *Cinchona* is collected as the true bark. By what means, or to whom mankind is indebted, for the discovery of the medicinal quality of the roots, is totally unknown; it is, however, probable, that its virtues were appreciated by the ancient physicians: for Dioscorides, physician to Anthony and Cleopatra, wrote on its qualities, in his work on Botany and Medicine, published just before the Christia Era, where he recommends it against weaknesses of the stomach, diseases of the liver, &c. &c. Galen also, another Greek Author, who wrote on medicine about a century afterwards, strongly recommends it for diseases of the liver. Paulus Ægineta, who is said to have been the first man that practised midwifery, appears to have first used rhubarb as an opening medicine. The roots were brought from China, where Michael Boyne, in his "*Flora Sinensis*," published at Vienna in 1656, says the plant is a native, and grows in great abundance. It was introduced from thence by Tartary to Aleppo, Damascus, and Alexandria, and thence reached Vienna. It was not known to Europe, till 1535, when the Chinese brought the roots for sale to the city of Goa in India. Valmont Beaumare states, that some soldiers in the army of Charles the V. brought it to Spain from Africa about the same time. This does not appear unlikely, for the dreadful disease, which the followers of Columbus brought from America into Spain, spread with such fearful rapidity, that it became indispensable to adopt measures to stop its violence; it seems therefore probable, this drug was introduced as a remedy; for Garcilasso de la Vega, who

died in the year 1536, mentions rhubarb as a sovereign cure, for the evil of the newly discovered world.

The Portuguese were the first who brought rhubarb by sea from Canton; but the Dutch soon obtained a part of this trade. In 1597, Gerard mentions, that himself and others had it growing in their gardens, exclusively for use in medicine; and relates a curious anecdote, relative to its use in case of an ague: he says, "I learned a notable experiment of one John Bennet, a Chirurgeon, of Maidstone, in Kent; a man as slenderly learned as myselfe, which hee practised vpon a butcher's boie of the same towne. Being desired to cure the foressaide ladde of an ague, which didde greeuously vex him, hee promised him a medicine, and for want of one for thee presente, hee tooke out of his garden three or fower leaues of the plante of rhubarbe, which myselfe had among other simples given him, which hee stamped and strained with a draught of ale, and gave it thee ladde to drink; it wrought extremely downwarde and upwarde within one hower after, and never ceased vntill nighte. In the ende, the strengthe of the boie ouercame the force of the physicke, it gaue ouer working, and the ladde loste his ague."

Although in the present day, we set great value on the medicinal virtues of this root; yet the principal reason of its cultivation in our gardens, is for the stalks, which are served up in creams, made into tarts, &c. and medical men have all recommended them as amongst the most cooling and wholesome tarts sent to table. We shall not, however, venture to lay down rules for making them, lest our ignorance in the art of cookery, should expose us to the ridicule or displeasure of our countrywomen, which we feel no disposition to run the risk of encountering. We may, however, without fear of contradiction, venture to say, that if the stalks be cut into squares, put in single layers on a pan, and placed in an oven of a moderate heat for about twelve hours, and afterwards put into wide mouthed bottles, with a fifth or sixth part of brown sugar, then covered down with bladder, and occasionally shook for the first fortnight; they make a most excellent preserve.

Rhubarb cultivated in this country is found to equal for medicinal purposes, that of foreign growth. The palmated leaved was first planted in this country in 1763, and the "London Society of Arts" in 1792 awarded a gold medal to Sir Wm. Fordyce, for raising 300 plants of this species from seeds, in the preceding year. In 1793 it was awarded to Mr. Thomas Jones. In 1794 Mr. Wm. Hayward, of Oxfordshire, received it for propagating rhubarb by offsets taken from the crowns of large plants instead of seeds; and in

the same year another was awarded to Mr. Ball, for his method of preserving the roots for use in medicine. Dr. Tirruogel, of Stockholm, states that no roots should be taken up till they have been planted ten years, and that they should be taken out of the ground in winter, before the frosts set in, or early in the spring, and immediately cut in pieces, and carefully barked: they should then be spread upon a table for three or four days, and be frequently turned, that the juice may thicken or condense within the roots. After this process, make a hole in each piece, and put a thread through it; by which let them hang separately, either within doors or in some sheltered situation.

All medical men acknowledge two virtues in rhubarb, that of evacuating bilious humours, and that of fortifying by its astringency the fibres of the stomach and intestines. Lord Bacon remarks "that rhubarb has manifestly in it, parts of contrary operations; parts that purge, and parts that bind the body, and the first lie looser, and the latter lie deeper: so that if you infuse rhubarb for an hour, and crush it well, it will purge better, and bind the body less after the purging than if it stood 24 hours." The principle in which the active property exists, is supposed to be a peculiar chemical substance called Rhubarbarin.

Species and Varieties.—These have now become rather numerous, but the sorts generally cultivated for tarts &c. are the following:—

1 Wilmot's	4 Elford	7 Gigantic
2 Cox's	5 Hybrid	8 Rhapontic
3 Judd's	6 Buck's	9 Palmate-leaved

Of these Wilmot's, and the Gigantic, may be considered decidedly the best; the former being a most excellent forcer, and the latter grows to an amazing large size without rankness. The palmate-leaved is held up by many as amongst the best for tarts. A. T. Thompson, Esq. M. D. remarks in the *Gardener's Magazine*, that he has tried the leaf-stalks of almost every species of rhubarb cultivated in Great Britain, and none, in his opinion, are equal to the palmatum; he judges they are more succulent, less fibrous, and contain a much larger supply of rheumatic acid, than those of any other species. Others again are decidedly opposite in their judgment, and complain of its strong medicinal taste, and its dry and wiry leaf-stalks. Now according to our ideas both these opinions are perfectly correct; if the roots are planted in strong land, and an exposed situation, the stalks in general are both dry and wiry; if on a very wet bottom in any kind of soil, they have a strong rank acid, but if they are planted in light rich soil in a north or north-west border, their stalks will

be found to equal, if not surpass those of the hybridum or Rhapon-ticum.

CULTURE AND PROPAGATION.

All the sorts may be propagated either by seeds or dividing the roots, the former is the best mode, making by far the finest plants, although in many cases division answers extremely well; care must always be taken to retain a good bud on the crown of each section, and to plant them on good ground, well trenched and manured. It is usual with many gardeners to blanch rhubarb early in the season, which decidedly improves the flavour and appearance, and the stalks requires less sugar to make them palatable, than when exposed to the open air; this may be accomplished by large Sea-cale pots, either with or without dung, but if this blanching be done out of the natural season of growth, it comes under the denomination of forcing. To accomplish this properly with little expense and trouble, has led gardeners to adopt many methods. One of the first practised, was placing large pots or handglasses over the roots, and covering them with a good thickness of hot dung, after the manner of forcing Sea-cale. Although great crops may be obtained this way, the stalks are very liable to be much broken by growing against the sides or tops of the pots; to remedy this evil Mr. Judd, of Edmonton, covered his bed with open frame work, around, and on which he placed the dung. On this system it grew very fine, and required much less attention than with pots or glasses. Another method is to take the roots up carefully, and plant them in a fluid mushroom shed, either in a bed of tan, or in pots and boxes filled with light soil, or tan, and allowed a temperature of 45 to 55 or 60 degrees. Tan is preferable to soil, because it receives the water more freely when given to the roots, and Mr. Knight has satisfactorily shown that the roots of all perennial herbaceous plants, contain within themselves, all the organizable matter, necessary for the formation of the leaves, and therefore require little or no soil, but only heat and water for their developement. After the forcing season the roots are divided and planted on a north border, and the strongest selected for forcing again the following season. This method we believe is practised at Elford, Kirkley Hall, Pinkie House, Scotland, and many other places. We have found the system of forcing in Mushroom sheds to produce large crops, of an excellent quality; and with some exceptions, it may be reckoned one of the best methods in use. We have observed, however, that where much fermentation is going on, with new beds, the colour of the stalks have been materially injured, and the flavour nothing near so

good as when grown under other circumstances. Others again take up old roots of four or five years standing, and plant them in large pots of rich mould, as thick as the roots can be placed in each pot ; these pots are taken either to a peach-house, greenhouse, pine-pit, or any other place where they can have a good heat, but experience has taught us that old roots when forced, never produce stalks so fine as young roots under similar treatment. Another method practised at Holly-Bush Hall, near Lichfield, is found very successful, particularly with the strong growing sorts ; it is true a very large quantity of dung is required to give a sufficient heat in severe weather, but where it can be accomplished it answers extremely well. The young roots are permanently planted two feet apart, in beds three feet wide, with alleys betwixt them two feet wide, and one and a half feet deep. In the autumn, after the leaves are off, fork the beds over, to the depth of four inches, and break the soil small with a rake head, then place a Sea-cale pot over each root, and cover the soil in the inside with dry sand six inches thick ; this done fill up the trenches with dung from the stables, well shaken together, and carry it up one foot three inches above the beds, then cover the beds with dry littery straw, to the height of one foot three inches above the tops of the pots. The sides of the beds should be built up with bricks and pigeon-holed.

The *System of Culture* we would recommend, is one that we have practised ourselves with the greatest success ; and first we shall give a short detail of our method of

Sowing the Seed,—About the end of February or beginning of March make up a bed of stable dung, about three feet high at the back, and two feet six inches at the front ; when well beaten down with the fork, and nicely levelled off, set on a frame of the size required, and lay on the bed, about nine inches thickness of good light rich mould, mixed with a third of good rotten dung, beat these ingredients well together ; and when the surface is level, scatter the seeds broadcast, and cover them about half an inch thick, with the same soil broken fine ; then put on the glasses, and in about three weeks the plants will be up. As soon as they begin to appear, give abundance of air, and continue to increase it, so that in April the glasses may be taken of altogether, they will, however, require protection from frosts at night, until they are ready to plant out in the open ground, which will be in May.

Planting Out.—If it is intended to plant out for permanent use, select a quarter of good rich soil, and trench it at least three feet deep, adding a good supply of well rotted dung ; be careful, how-

ever, in trenching, not to bury all the top spit of soil in the bottom of the trench, but reserve it for the roots to be planted in, for they will thrive much better in it, than in that taken up so far from the surface. Then plant the roots in rows six feet apart, and four feet from root to root in the rows, for the smaller growing sorts, as Wil-mots, &c. and six feet from root to root for the Gigantic and other strong growing kinds. Or if planted on Dr. Bevan's system, stated Vol. 1, page 486, they will grow very fine. None of the stalks should be gathered the first or second years, but in the third season they may be used as required. Cut off all the flower stalks as soon as they begin to shew flower, except such as may be left to collect seed from, which should always be the finest. Never gather the stalks to excess late in the summer, for if this be not attended to, they will so far degenerate as to throw up the following season a complete wood of spindling, stringy stalks, scarcely fit for use; whereas, if treated properly, they will continue to produce abundantly for many years.

General Culture.—All the culture required after planting out, is to keep them free from weeds during *summer*, and fork in a good coat of rotten dung every *spring*; the crowns should also be covered with a portion of half-rotted dung, to preserve them from being injured by frost in winter.

Planting out for Forcing.—Take the plants from the hotbed where they were sown, and plant them in rows eighteen inches apart every way, on ground previously well-dunged and trenched two feet deep. Stir the soil about them occasionally during summer to encourage their growth, and by the time they are two years old, the roots will be very fine, and at that age best calculated to force.

Mode of Forcing.—The best mode of forcing, and one attended with the least trouble, is to place a small frame of one or two lights in a peach-house, stove, or forcing pit of any kind, and having put in a sufficiency of old bark, take up a quantity of roots without breaking them, and plunge them in the bark as thick as they can be put together, until the frame is filled; then cover them down with wooden covers, or the glasses belonging the frame will do, providing mats be thrown over to exclude the light. If they become dry, water them as often as they require it; and in about a fortnight the stalks will be ready for use. When the first half of the frame has begun to shoot up, fill the other part after the same manner; and when it has grown a little, remove the roots first put in, and fill up with a fresh supply, and continue to do so until the forcing season is over: the roots forced may be either thrown away, or planted; but we

would not advise to force them again, as young two years old plants are far better.

Those persons who have no forcing-houses, may have rhubarb something earlier, by placing sea-cale pots with loose tops over the roots without dung; and when the stalks get to the top of one pot, take off the lid, and place another pot upon it: this will allow them to grow to a great length, without danger of breaking.

JOSEPH PAXTON.

Chatsworth, March 1st, 1833.

ARTICLE V.

ON THE DESTRUCTION OF THE RED SPIDER, IN FORCING-HOUSES.

BY MR. STAFFORD.

As far as my knowledge extends, Mr. Speechley was the first individual, who recommended sulphur for the destruction of the Red Spider; (*Acarus tellurius*) and in most cases, by his manner of application, it was a certain cure. However, from the length of time it required, connected with the tedious operation, of separately brushing both the under and upper surface of every leaf, rendered it almost impossible to do it to any extent.

Previous to the time of the method I here intend to explain, coming to my knowledge, the Vines alone, at this place, generally occupied a man three weeks, in performing an operation more unpleasant and injurious to a person's health, than all others connected with gardening; for this reason alone, many persons gave up the method as utterly impracticable. Another great objection was, the friction of the brush often injured the leaves, so that those who had sufficient perseverance, to go entirely through with the operation, generally found when they had finished, the plants they had been dressing were considerably damaged. This led some persons to start the erroneous idea of washing the flues with sulphur, under the supposition, that it would prevent the insect's appearance; judging very wisely, that to prevent a disease is far better than to cure it.

We know from experience, that sulphur in an ignited state will destroy either animal or vegetable life, and to apply any quantity of it to those parts of the flues subject to great heat, will always be attended with serious, if not fatal consequences. Another train of insurmountable difficulties presented themselves under the old system;

the form, and texture, of the foliage of many trees and plants, are so small and delicate, that no person could effectually clean with the brush, but the most that could be accomplished was to just preserve the trees from being actually destroyed by the insects. We very frequently find this insect attack our choice fruit trees against the walls in the open air in dry summers, and often so contiguous to the hot houses that the old method of brushing the leaf was seldom found sufficient to stand through one season, without being over and over repeated, in consequence of their so rapidly increasing, and spreading from the walls on the outside.

With such a multiplication of obstacles no wonder that the brushing system fell into disrepute. The chief object in destroying insects on plants, is to make use of a method, where the operation can be performed with ease, dispatch, and without injuring the most delicate foliage; these and many more essential recommendations are included in a method practised by me, which was originally communicated to me by one of the best practical gardeners I am acquainted with, Mr. J. Haythorn, late gardener to Lord Middleton, at Wollaton, near Nottingham. About thirteen years ago I called on Mr. Haythorn, at the season of the year when the work of brushing was in progress, he expressed a wish that I should make trial of a remedy he had used with perfect success some years. It is as follows:—Take half a pound of sulphur, put it in a pail, to this add as much water as will make it into a paste, then put three, four, or six gallons more of water, just as the size of the vessel will allow, stir the mixture until the water appears of a pale buff colour. With this liquid, syringe every plant and leaf in the house, on which either the insect exists, or to which the least suspicion is attached; let it be repeated twice or three times a week, until every part of the foliage is saturated, or as long as the application of water from the syringe is requisite.

In a vinery, commence syringing as soon as the bunches are thinned; in a peach-house, cherry-house, or orange-house, as soon as the fruit is perfectly set; and in proportion to the quantity of water required to each species of fruit, put in the sulphur. A house naturally damp, will, of course, be less liable to the insect; here the mixture should be applied in a thicker state, and at longer intervals. Most gardeners are of opinion, that there is something very congenial to the constitution of plants in sulphur; when applied externally, it appears, particularly under glass, to enter the whole system. It has been detected in plants by chemists, and there is no doubt, but it corrects many diseases in vegetables, as well as animals.

In what we call here our winter-house, or late vinery ; I generally light the first fire for the season on the first of May, and during the whole summer, I apply a little fire in the evenings. This, of course, is very congenial to the nature of the Red Spider, and were not some effectual means used, neither foliage nor fruit could ever be produced to perfection ; but so well has this method I have detailed, answered, that I now scarcely ever expect to see another instance of their appearance. This remedy will not only destroy them, when the plants are literally covered, but if applied in time, entirely prevents their appearing at all ; I speak from actual experience on the subject. The house I have already named, and many others that I have had under my care, have given ample proof of the truth of the assertion ; and I now feel so satisfied upon the subject, that with the greatest confidence I can recommend it as a specific to the public.

I must beg an excuse for entering into so long a detail on the subject, but I was partly led into it by observing that T. A. Knight, Esq. the eminent president of the Horticultural Society, complains of this insect destroying his Persian Melons. I hope, however, the merits of sulphur will be duly appreciated, for I never observed any cause of complaint, with regard to its adhering, to either the leaf or fruit, or any fear, that in case the plants are syringed with clear water, the sulphur will be washed off without answering the end. If it should ever wash off, the expense and trouble is so little, that I should recommend adding more or less of sulphur every time I syringe. It certainly in part prevents the different species of Coccus from increasing, they cannot adhere to either wood, or leaves, where an application of this sort has been made.

GEORGE STAFFORD.

Willersley, Feb. 18th, 1833.





CRIMSON CREEPING CEREUS.

ARTICLE VI.

HISTORY AND CULTURE OF THE NEW CRIMSON CREEPING
CEREUS, WITH SOME REMARKS ON THE NATURAL
ORDER CACTEÆ.

THIS New and Splendid Variety, was raised some years ago by Mr. Mallison, gardener to Sir Samuel Scott, from seed of *Cactus speciosissimus* fertilised by *C. flagelliformis*: its appearance is as nearly as possible intermediate between the two parents. It was exhibited for the first time at a meeting of the Horticultural Society in 1832. Its stem is not the dull colour of the *C. flagelliformis*, but resembles in brightness the *C. speciosissimus*. It must be classed amongst the very best hybrids which Horticulturists have succeeded in obtaining.
—*Bot. Reg.*

Culture.—This present variety appears to be a hardy greenhouse plant, but will probably do best under similar treatment to the *C. speciosissima*, and many other species. The best compost for them is loam and peat, or sandy loam, mixed with a small portion of lime rubbish, say about a fourth part. The pots they grow in should be as small as the plants will allow, and have plenty of potsherds at the bottom, to give a good drainage, for the least stagnation of water will materially injure the plants; water them very seldom, and give very little at a time. In June, turn them out of doors in a sheltered situation, but perfectly exposed to the mid-day sun; placing them on a board or floor of any kind, to prevent the worms from entering at the bottom of the pots. In September, take them into the greenhouse, and place them in a situation, where they will receive plenty of light and air during winter; and early in the spring, remove them into the stove in succession, as they are wanted to flower. On this system the flowers will be much finer and more abundant, than when grown regularly in the greenhouse.

Propagation.—Take off cuttings of any length required, and lay them on a shelf in the greenhouse, &c. to dry, then let them remain until they begin to have a shrivelled appearance, say a week or fortnight; then pot them in small pots in the same compost as recommended for old plants; set them on a shelf as near the glass as convenient, and be particularly cautious not to overwater them.

Natural Order.—The Genus *Cactus* was originally placed by Jussieu under the Natural Order *Opuntiaceæ*; but Decandolle has latterly made the Order *Cacteæ*, and divided it into two sections:—*Opuntiaceæ* and *Rhipsalidæ*.

Affinities of the Order.—That remarkable distension, or increase of the cellular tissue of vegetables, from which the name of succulent is derived, is no indication of Natural Affinity, but rather to be considered a modification of structure, which may be common to all tribes. Hence, the immediate relationship of Cactæ, with Grossulacæ, (the currant tribe) in which no succulent tendency exists; the only difference in the nature of the two orders consists in the stamens of Cactæ being without limits, the seeds without albugen or inner skin, and the Calyx and Corolla, undistinguishable; while in Grossulacæ the stamens are five, the seeds have the inner skin or albugen, and the calyx and corolla are distinct. Through Rhipsalis, Cactæ are connected with Portulacæ, to which also the curved embryo of the section of Opuntiaceæ probably indicates an approach; and Decandolle further traces an affinity between these plants and Ficoideæ.

Geography of the Order.—All the species appear to be natives of America, they are abundant in the Tropics, and extend but a short distance beyond them either to the North or South. The species which are said to be wild, or naturalized in Europe, Mauritius, and Arabia, have been introduced from America, and having found themselves in situations suitable to their habits, have taken possession of the soil like actual natives. Hot, dry, exposed places, are the favourite stations of Cactæ, for which they are peculiarly adapted, in consequence of the small quantity of evaporating pores which they possess, as compared with other plants; a circumstance which, as Decandolle has satisfactorily shown, will account for the excessively succulent state of their tissue.

Properties of the Order.—The fruit is very similar in its properties to that of Grossulacæ, some being refreshing and agreeable to the taste, others mucilaginous and insipid; they are all, however, destitute of the excessive acidity of some gooseberries and currants.*

ARTICLE VII.

ON FORCING BULBS TO CAUSE THEM TO FLOWER IN WINTER.

BY MR. F. F. ASHFORD,

Gardener to P. L. Brooke, Esq. Mers Hall, Cheshire.

BEING a constant subscriber since the commencement of the *Register*, I have, with several of my neighbours, hailed with pleasure, the first day of every month, feeling assured that your Magazine would

* Lindl. Int. Nat. Syst.

bring us a fresh supply of important information, to add to our scanty stock of knowledge. I have sent for your insertion, if you think they merit it, a few remarks on my method of forcing bulbs, which I hope may be of some service to the more inexperienced portion of your readers.

Early in October, send for a quantity of Dutch bulbs, as *Narcissus*, *Tulipa*, *Hyacinthus*, &c. and previous to doing so, provide a quantity of mould, composed of

Two barrowfull of well decomposed hot-bed dung,

One barrowful of fresh loam,

One do. of vegetable or leaf-mould,

One quarter of a barrowful of fine sand.

These are to be well chopped, and mixed together; then lay the compost in an open shed, to dry a little before using. About the second week in October, pot the bulbs in the above soil, in pots proportioned to the size or sort of bulb. Fill all the pots with soil, and shake it down, but do not press it with the hand before commencing to plant the roots; then lay some clear sand on the soil, in the middle of the pot, and placing the bulb on the sand, gently press it down till within half an inch of the top. Care must be taken not to press with sufficient violence to injure the bulb, yet it must be left firm in the pot; for on these two things much depends, with regard to their growing freely.

After they are potted, and named or numbered, place them in a cucumber or melon frame, prepared after the following manner:—Take out the soil, and lay on the old bed about two inches thick of fine ashes, level and make them pretty solid, on the top of this lay a quantity of sifted ashes, in which plunge the pots, making the ashes as firm about the pots as possible. After this is finished, cover the whole to the depth of eight or ten inches with dry light soil. Always choose a dry day for the purpose, and let every thing be dry that is used about plunging; or the bulbs will be liable to perish. Give air at all times in fine mild weather, but allow no wet or frost to enter the covering soil: at nights, the lights must always be on, and in severe weather closely covered down with mats; but if the nights are mild, the glasses may be tilted, to allow a little air.

In January, take them out of the frame, wash the pots, carry them to the stove for flowering; and give them regularly a moderate supply of water, to assist them to flower strong. As the flower stalks advance in growth, tie them to neat green or white sticks; and if treated as above, they will flower beautifully. Crocuses planted four or five in a pot, flower well when treated as above. I also beg to

state, that Mr. J. Knight, of the Exotic Nursery, Chelsea, is supposed to sell as good bulbs, and as cheap, as any person in the neighbourhood of London.

F. F. ASHFORD.

Mere Hall, Feb. 20th, 1833.

ARTICLE VIII.

ON THE TREATMENT OF THE PRIMULA PRÆNITENS, (SINENSIS LINDL.) GLOSSY PRIMROSE.

BY MR. THOMAS UPTON.

THIS plant is a native of China, and was introduced into this country, in the year 1820; and from its free blooming habits, and splendid appearance in the winter months, when under good cultivation, is deserving the notice of every lover of plants. The following is the method of culture we pursue:—in the month of October, we make cuttings of all our old plants, taking them off a little above the surface of the soil, we then fill with a rich prepared compost various sized pots, according to the strength of the cuttings; in each pot we plant one cutting, and put a little white sand round it; then with a fine perforated rose, we give them a little water in order to settle the mould. Afterwards, we remove them to a close frame, and plunge them in a little bottom heat, admitting no air until they begin to grow. As soon as they show flower, we remove them to the greenhouse, where they are greatly admired. The old root may also be plunged in a little heat, which will sometimes make it shoot vigorously, and produce abundance of cuttings. Under this treatment, we have a plant of the white flowering species, (which by no means is very common) that produced ninety-seven fine flowers, from seven flower stems. They also produce abundance of seed, by which they are easily raised.

THOMAS UPTON.

Alton Gardens, Feb. 22nd, 1833.

ARTICLE IX.—ON PROPAGATING ORANGES.

BY MR. ALEXANDER C. LAMBIE.

IN volume 1, page 766, of your *Register*, a correspondent enquires what is the best mode of increasing the Orange, and the proper time for performing it? The best and quickest method is by cuttings,

and the best time for putting them in, is just when the plants from which they are to be taken, have begun to grow. The time will therefore depend on the situation and treatment of the old plants. Wood of from one to thirty or forty years old, and cut to any length from eight to eighteen inches, will grow equally well; the larger and older the cuttings, the sooner they will make large plants and produce fruit. At whatever age the wood is, let the cuttings be of equal length; so many of the leaves must be cut off, as will allow each cutting to be planted six inches deep. In gathering the cuttings, take a sharp knife and cut them right across, it does not signify whether at a joint or not. Use a pot eighteen inches deep, put a flat piece of tile over the hole at the bottom, cover the bottom an inch thick with moss, (*Hypnum*) closely pressed, and upon that an inch thick of potsherds broken small, place the end of the cutting upon the potsherds, and fill up the pot with clean pit or river sand; water them well to settle the sand about the stems, plunge the pots in a gentle bottom heat either in a hot-bed or hot-house pit; if in the latter, put a hand or bell-glass over them, shading them from the sun. They will require no more water from the time they are put in, until they have taken root. When ready for potting, which will be in two or three months, the roots will be found wrapped amongst the moss, they must be carefully separated, allowing as much of the moss to adhere to the roots as possible, for it will tend greatly to prevent the sudden check which cuttings generally receive when first potted. When potted, place them in the same or a similar situation to that they were in before, give them a gentle watering with a rose watering-pot; and when they have begun to grow, harden them by degrees.

The following compost will be found most suitable for them to be potted in:—Turf taken from a light soil about three inches deep, and laid in a heap till the grass and roots are decayed, peat earth, well rotted dung, leaf-mould, and clean pit or river sand, of each equal quantities, mixing them when wanted for use.

ALEXANDER C. LAMBIE.

February 12th, 1833.

ARBORICULTURE.

ARTICLE X.—ON PRUNING FOREST TREES.

BY A FORESTER.

THE taste for plantations may be good or bad, but the labour annually required in thinning and pruning them, must necessarily furnish employment to the most valuable, though often the least considered of the children of the soil, those namely who are engaged in its cultivation. To obtain the immediate command of wood, mature enough to serve as shelter and ornament has hitherto been denied to the improver; he has been compelled to form his plan whilst his plants are pigmies, to await their slow progress towards maturity, and to bequeath as a legacy to his successors and descendants the pleasure of witnessing the full accomplishment of his hopes and wishes. He also too often bequeaths his land to the care of careless and ignorant persons, who from want of taste or skill leave his purposes unfulfilled.

Trees weakened by growing in a crowded state, become more liable to disease, the attacks of insects, and parasitic plants, as mosses and lichens, which rarely or never appear on healthy and vigorous trees. It is a great but a common error to suppose that by leaving trees in an individually crowded state, the object of a close cover is secured; on the contrary this object will only be gained for a few years at first, or until the trees interfere with each other's healthy growth, and begin to contend for existence. By yearly judicious pruning and thinning, or by keeping every individual tree in its most perfect vigorous state, a perpetual cover will be obtained, as complete as the species of Tree and the nature of the soil will admit.

Timely thinning and pruning, thereby admitting a circulation of pure air, and the solar rays into the interior of the plantations will check the propagation and growth of parasites.

A FORESTER.

Montgomery, March 1st, 1833.

NATURAL HISTORY.

ARTICLE XI.—ON THE STUDY OF THE SCIENCE OF BOTANY.

BY MR. F. F. ASHFORD.

Fifth Communication.—(Continued from page 125.)

3. **STAMINA**, (stamens,) are the male part of the Flowers. Linnaeus defines them to be an entrail of the plant designed for the preparation of the pollen, each stamen consists of

1 **Filamentum**, a filament or thread which serves to elevate the anthera, and at the same time connects it with the flower, these are either :—

a **Æqualia**, —equal, when they are all of an equal length.

b **Inæqualia**, —unequal, when some are long and others short, or :

c **Connata**, when joined in one body, but their number, figure, and insertion expressed.

2. **Anthera**, or summit, containing within it the pollen, and when grown to maturity, discharges the same, it is either

a **Distinctæ**, not cohering : or *b* **Connata**, joined by it sides into one body.

3. **Pollen-meal**, a powder of the anthera, destined for the impregnation of the germen, and bursting in a viscous humour into fine atoms, is by a prolific blast scattered on the surface of the stigma.

The stamina, being, as I have said, the male part of the flower, the construction and distribution of the sexual system, is principally founded upon, and regulated by it, as will appear in the explanation.

4. **Pistillum**, pointal, is the female part of the flower, it is defined by the immortal Swede, to be an entrail of the plant designed for the reception of the pollen, it consists of three parts, viz. :

1. **Germen**, rudiment of the fruit, accompanying the flower, not yet arrived to maturity ; it is either,

a **Superum**, when included in the corolla.

b **Inferum**, when below the corolla.

2. **Stylus**, that part of the pistillum, which elevates the stigma, from the germen.

3. **Stigma**, the female uteras, at the top of the pistil, furnished with a moist humour for the breaking of the pollen.

The pistillum, being the female part of the flower, is of great consequence in the sexual system, as will appear when it comes to be

explained, for the information of the young tyro, to whom these explanations of the Linnæan Sexual System of Botany are humbly addressed. I have here subjoined a descriptive plan of the way the impregnation of the germen is performed. The Anthera which at the first opening of the flower is whole, bursts open soon after, and discharges the pollen, which dispersing itself about the flower, part of it lodges on the surface of the stigma, where it is detained by the moisture, with which that part is covered, and each single grain or atom of the pollen, bursting and dissolving in this liquor, discharges something that impregnates the germen below.

5. Pericarpium, (seed vessel) is the germen grown to maturity; Linnæus defines it to be an entrail of the plant big with seed, which it discharges when ripe. It is of eight kinds, viz.:

1. Capsula, capsule, is a hollow pericarpium, which cleaves or parts in some determinate manner. It is composed of:

a Valvula, an opening, a part of the capsule or outer cover to the fruit.

b Loculamentum, a kind of arched cell, for the lodgement of the seeds.

c Dissepimentum, partitions of the fruit, which divide the pericarpium into cells.

d Columnella, a little column, the substance that passes through the capsule, and connects the various partitions and seeds.

2. Siliqua, a pod, is a pericarpium of two valves, where the seeds are fastened to both sutures or joining of the valves.

3. Legumen, a pod, also, where the seeds are joined to one suture only.

4. Drupa, a pulpy, or fleshy pericarpium without valve, containing a stone, as in *Prunus*. *a* Succulenta containing a pulpy humour. *b* Sicca, opposite to the foregoing, dry.

5. Pomum, a pulpy or fleshy pericarpium without valve, containing a capsule as in *Pyrus*.

6. Bacca, a berry, a pulpy or fleshy pericarpium without a valve, wherein the seeds have no other covering, as in *Rubus*.

7. Strobulus, a pericarpium, formed of an Amentum, (Catkin,) with hard scales lying over each other, as in the pine tree.

8. Folliculus, a pericarpium of one valve gaping lengthways, without having the seeds fastened to the suture.

6. Semina, seed, which, according to the definition of Linnæus, is a deciduous part of the vegetable; the rudiments of a new one quickened for vegetation, by the sprinkling of the pollen. It is of three kinds.

1. *Semen*, a seed, properly so called, is the rudiments of a new vegetable, furnished with sap, and covered with a bladdery coat or tunic. It consists of

a *Corculum*, the essence of a new plant within the seed.

b *Plumula*, the ascending scaly part of the corculum.

c *Rostellum*, the descending plain part of the corculum.

d *Arillus*, the proper exterior coat or tunic of the seed.

e *Hilum*, the eye, the external scar of the seed, where it has been fixed to the fruit or receptacle.

f *Cotyledon*, the side lobes of a seed, of a porous substance.

g *Corona*, a crown, a little cup adhering to the top of the seed by which it flies. It is either

Pappus, a downy feathery cup, assisting the seed to fly.

Stipulatus, a kind of thread like trunk, elevating the down.

Capillaris, undivided hairs. *Plumoses*, feathery hairs.

Ala, a membranaceous wing, fixed to the seed.

2. *Nux*, a nut, a seed covered with a bony epidermis, called the shell, having one, two, or more cells.

3. *Propago*, the seed of a moss, having neither tunic, nor cotyledon, but consists only of the plumula of a naked corculum, where the rostellum is inserted into the calyx of the plant.

7 and last part of the fructification, *Receptaculum*, a receptacle, is the base which connects the six parts together. It is either

1. *Propium*, proper, is that which belongs only to a single fructification; this is either

a *Fructificationis*, common to both flower and fruit.

b *Floris*, containing the flower, but not the fruit.

c *Fructus*, containing the fruit, without the flower.

d *Seminis*, a base that fastens the seed within the fruit.

2. *Commune*, common, containing many florets and fruit.

a *C. Paleaceum*, chaffy scales, which distinguished the florets.

3. *Umbella*, an umbel, a receptacle which from a common centre, runs out into thread-shaped footstalks of proportionate lengths.

a *U. simplex*, when the footstalks proceed from one and the same centre of the receptacle.

b *U. composita*, when every footstalk of the general umbel produces a partial one.

c *U. partialis*, a partial umbel, a part supported by the universal one.

d *U. universalis*, composed of many simple umbels.

e *U. prolifera*, an umbel, more than decompound.

4. *Cyma*, a receptacle, producing many footstalks from the same

centre that are of unequal lengths ; the partial ones irregular on long fastigiate peduncles.

5. *Rachis*, a thread-shaped receptacle, the flowers adhering to it lengthwise, and forming a spike.

6. *Spadix*, the receptacle of a palm, produced within a *spatha* (sheath) divided into branches that bear fruit.

The parts of fructification with their sub-divisions having been explained separately, I shall here give a view of them altogether with the proper distinguishing character assigned to each by Linnaeus, beginning with the vegetable itself.

The essence of the vegetable consists in the fructification.

The essence of the fructification consists in the flower and fruit.

The essence of the flower consists in the anthera and stigma.

The essence of the fruit consists in the seeds.

We come now to the parts, namely :

1. Pollen is a dust of vegetables, destined to burst in a liquor appropriated to that purpose, and to discharge therein by its elastic force, a substance not distinguishable by the naked eye.

2. Seed, is a deciduous part of a plant, fraught with the rudiment of a new one, and quickened by the pollen.

3. *Anthera*, is a vessel that produces and discharges the pollen.

4. *Pericarpium*, is a vessel that produces and discharges the seeds.

5. *Filimentum*, is the foot that supports the anthera, and fastens it to the vegetable.

6. *Germen*, is the rudiment of the pericarpium or semen, not yet arrived at maturity.

7. *Stigma*, is the moistened summit of the germen.

8. *Stylus*, is the foot of the stigma that connects it with the germen.

9 and 10. *Calyx* and *Corolla* are the teguments or covers of the stamina and pistillum ; the former arising from the cortical epidermis, or outer bark, and the latter from the liber, or inner bark.

11. *Receptaculum*, is that part which connects the parts before mentioned. From these characters the following principals may be deduced :

1. That every vegetable is furnished with flower and fruit, there being no species where these are wanting.

2. That there is no fructification without anthera, stigma, and seed.

3. That the anthera and stigma, constitute a flower, whether the covers are present or wanting.

4. That the seeds constitute a fruit, whether there is a pericarpium or not.

F. F. ASHFORD.

RURAL AFFAIRS.

ARTICLE XII.

AN ACCOUNT OF THE METHOD OF PRESERVING THE LEAVES OF TREES, IN CASHMERE, AS A SUBSTITUTE FOR HAY.

COMMUNICATED BY L. T.

From the Manuscript Papers of the late Mr. Wm. Moorcroft.—Published in the Geographical Journal.

IN several mountainous countries greatly distant from each other, and in which, much grass, apparently of a good quality, might be cut for hay, as winter food for cattle; I have observed a preference given to the leaves of certain trees for this purpose:—these were the willow, the mulberry, a variety of elm, and several others; but the first mentioned and the walnut were held to be the best, and considered much more warming and nourishing, than any kind of grass made into hay, especially for sheep. Small branches, after having been cut when in full leaf, and before they begin to loose any of their verdure, are immediately so disposed within the first forks of the tree to which they belong, as to be thereby retained in the form of large hay-cocks. These branches are piled loosely, yet are so engaged amongst themselves as not to be detached by wind, neither do they lose their leaves, nor are the least rotted, or in any other respect damaged, as to their fitness for food.

I am not mistaken in asserting, that the fat is whiter of the mutton of Cashmere, not only than of the mutton of Tibet, but of any other sheep I have seen; but whether this difference be wholly, or in a degree, owing to the sheep being fed on dry leaves, I have not facts enough before me to determine.

This forage, unless where very abundant, is reserved for the severe part of the winter, when the cattle are driven under the trees, on which the store is suspended; and the dry branches being pulled down, are eaten by them with great avidity. The practice is thus simple, unexpensive, affords a considerable resource in a well-timbered or forest farm, and may, perhaps, be worthy of trial, if it prove not injurious to the growth or quality of the timber; on which, I refer to what I have already said, of the management of walnut-trees, in Cashmere. The scarcity of natural pasturage, has forced the farmers of Tibet, to cultivate the productions of their soil, as lucerne, &c. merely for the increase of fodder; whereas, in Cashmere, the exuberance of natural productions, the neglect of cultivating them to

perfection, the selection of the leaves of forest trees, in preference to the leaves and other parts of grasses, and esculent roots, as turnips, &c. may bring the soundness of the judgment of Cashmere farmers into question, by the farmers of England. My observations on this preference are too limited to be of any practical value; but I am able to aver, that sheep, which had been preserved from dying by the rot, through feeding on dry prangos, fell off in condition greatly, when put upon clean washed turnips, and regained their former state rapidly on reverting to prangos. It appears to me not improbable, that if sheep, when they just begin to show symptoms of rot by *arching their backs*, were put on a diet of dry leaves alone, they would be prevented from dying of this complaint; and I conceive would prove speedily curative; also, in the case of the oscaris worm, and rustling in the wind-pipe of lambs, fed on rank aftermath in the beginning of a winter, following a wet autumn. The arching of the line of the back, perhaps, produced by an attempt, to relieve the irritation occasioned by vigorous activity of the small fluke worms, which have only just entered the gall-ducts, is a symptom I have never heard noticed by shepherds; but, according to my own observation, is the first which indicates their presence, in the beginning of winter. When grass is also stored here for winter fodder, it is twisted into thick ropes, immediately after being cut; and in this state, hung across the upper branches of trees. Without other preparation for hay, it thus keeps free from rottenness, and generally even from mouldiness, notwithstanding the great quantity of rain and snow that falls in this country. Grass thus dried, is generally given to the flock in a morning, and the leaves in the afternoon or evening; but the latter are most depended upon for fattening. Oil-cakes, made of linseed, walnut-kernels, mustard-seed, along with the seed of cotton, are employed for this purpose, and the flags or leaves of sedge.

I. T.

COLLECTIONS AND RECOLLECTIONS.

ARTICLE XIII.

CONVEYING FRUIT TREES BY SEA.—The following is Mr. Barker's account of the experiment (conveying fruit trees by sea:) "In regard to the means I possess of live plants of the white mulberry of Italy to Bombay, you will indulge with me in the expectations of the success of my endeavours, when I inform you, that when

in Aleppo, for four years successively, I received annually from Messrs. Martin, Bardin, and Co. of Chamberry, in Savoy, two hundred to three hundred grafted trees of all the fruits of Europe, which were sent to me packed in damp moss, without requiring any watering or care on board ship, but thrown into the hold like any package of dry goods; and after having been necessarily deprived of light, air, earth, and water, for five months, I have sometimes, on unpacking them, found the tree in blossom. It has been planted, and I have, in two or three instances, eaten of the fruit of that very blossom."—*Alexander's East India Magazine*.

BOTANIC GARDEN IN THE NEIGHBOURHOOD OF SHEFFIELD SUGGESTED.—My youngest son Arthur, in the spring of last year, wrote to you upon the subject of a fruit garden, of two and a half acres, which he was about to plant for Stephen Mills, Esq. at Binfield, in Berkshire, requesting your opinion upon several points particularly as to the best mode of preparing the ground and planting the same with a view to profit. You was pleased to communicate your opinion in manuscript, stating as a reason that the earliest period at which it could be given through the medium of the *Register* would be too late to be of any service that season. The plan you recommended was, I have reason to believe, strictly adhered to. The trees were purchased at the excellent nursery of Messrs. Ronalds' and Sons, of Brentford, Middlesex; potatoes were planted between the trees as recommended by one of your correspondents, * and the result of the whole far exceeded our most sanguine expectations. The ridging up of the land into beds to receive the dwarf apple trees, as suggested in your letter, has proved unquestionably to be a capital mode of planting, and the planting of middle-sized potatoes whole, each in a bunch of litter dung is undoubtedly the least troublesome mode, and the most certain of success. From 13 bushels of seed two hundred and sixty-one bushels of fair-sized potatoes were produced, but to go more into detail at present would interfere with another object which I have in view, and about which I am anxious to produce a sensation through the medium of your excellent journal, reserving the Binfield fruit garden for a more lengthened statement at a future opportunity.†

Know then I am at this present engaged in laying out between 30 and 40 acres of land, heretofore farm land, into garden ground, and

* Vol. 1, p.p. 20, and 158.

† We will insert the system we recommended together with the letter sent to us on the occasion, if it will meet the wishes of J. D. who will oblige us by any further particulars of success.

for sites to build upon, at Little Sheffield. The site in question is within one mile of the centre of Sheffield, and not a hundred yards from the great London road ; in the middle of the estate is a spot of about 10 acres, the best adapted for a Botanic Garden of any thing I ever saw. It has within that space table ground, steep hill, and low land, hard spring water, soft spring water, and a small stream ; the general surface dips to the south, and faces one of the best landscapes of the country. There are two approaches to this favoured spot, and each is to be protected with a lodge. Now what I want is, for you to raise your powerful voice and able pen in favour of a Botanic Garden at this place, for I know no where in which there are more good amateur gardeners than at Sheffield, and being in your own immediate neighbourhood, and acquainted as you must be with all the good gardeners in the country. I have no doubt, but that a suggestion from you, would have the effect of producing a public meeting in Sheffield, of all those who take pleasure in the interesting science of Botany. From being constantly on the wing, I have but little time to do more than suggest to others, what appears to me to be of utility in a particular district, and in the hope that the suggestion here made may have its effect, in inducing you to entertain and promulgate it through the medium of your *Register* ; I consign it to your care with many thanks for your attention to my son's letter.

J. D.

P.S. I am about making the experiment of fruit gardens with small dairy farms for a noble Earl in Kent, concerning which I may probably write you some particulars in the course of the ensuing month.

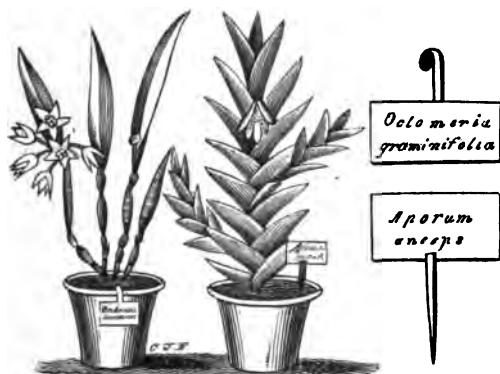
PRESERVING WALNUTS.—In answer to the enquiry of W. M. page 90. I recommend that, when fully matured, the nuts to be carefully plucked by hand, selecting the finest fruit, and using the same degree of caution that is due in plucking apples, so as not to bruise or crush the rind or hull ; and then spread them singly on shelves or on a dry floor, scarcely permitting any one to come in contact with another : after they have lain a month or six weeks, give them a very light covering of chaff cut from clean wheat straw. When wanted for the table, the rind or hull will cleave from, and leave the shell clean and fresh ; and the kernel will also peel, and be found equally well-flavoured during the entire year as when first plucked. Although I obtained the above information by one of my wicked pranks when a boy, yet it will not on that account be one whit less efficacious to W. M. if fairly adopted.

H. DYSON

Doncaster, Feb. 4th, 1833.

LABELS FOR PLANTS.---Various plans are made use of, for fixing the names to different plants; but I think none will be found cheaper, and more readily obtained, than the following, which may be made of waste pieces of tin-plate. The polish of the tin may be taken off, by applying a weak acid, as cream of tartar, or an apple cut

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in two, and rubbed upon it. Then with a common pen and ink write the name; the ink will sink into the pores of the metal; afterwards run over the writing a little boiled linseed oil, which will prevent its being defaced. If the name is ever required to be taken out again, it may speedily be done, by plunging the label into a strong acid, which will clean off both the ink and oil. The labels may be clipped to any pattern, and stuck upon a stick, or hung upon the side of the pot, as in figure 23.

M. SAUL.

PART II.

REVIEWS AND EXTRACTS.

REVIEW.

THE FIELD NATURALIST'S MAGAZINE,

And Review of Animals, Plants, Minerals, the Structure of the Earth, and Appearances of the Sky.

CONDUCTED BY JAMES RENNIE, ESQ. M. A. ETC.

8vo. Monthly Numbers, 1s. each.

OF this Work we have read the three first Numbers, and have found them both interesting and instructive; each is illustrated with numerous wood cuts, and contains 48 pages. The Contents are composed of facts in Natural History, observed both by the Author himself and various other individuals, together with extracts from American Ornithology and translations of Le Vaillant's Birds of Africa, and many other valuable and expensive Works, in French, Latin, Greek, German, Dutch, &c. &c. which were all our readers capable of reading in their originals could not obtain them except by a great cost. There is also a collection of short interesting scraps, called a "Chapter of Varieties" gathered from various Sources: we have no hesitation in recommending it to any of our friends, as a book well worthy their attention. We have extracted some few things, that our readers may be able to see the nature of the Work; we are not aware, that these are the most interesting or valuable, but we rather selected them in consequence of their being easily detached in a small space, giving the whole meaning without any mutilation. No. 1, commences with an Article by the Author himself, on

EAGLE-SHOOTING IN THE ALPS.—"The peeping curiosity, staring wonder, or hostile antipathy, manifested by all day-flying birds towards Owls, is taken advantage of on the Continent for several purposes, but for none more interesting than that of Eagle-Shooting. When the goat-herds on the Alps, therefore, find their flocks diminished, and the Chamois-hunters find their sport spoiled by the depredations of an eagle, or a lammer-geyer (*Gypaëtus barbatus*. STORR) haunting a particular district, they prepare to lure him to his destruction by means of an owl. The largest species, such as an eagle-owl, (*Bubo maximus*, SIBBALD,) is always chosen, when it can be procured for this purpose, the smaller species being less likely to attract the attention of large birds. The owl is chained by the legs to a post in some conspicuous place, so as to be seen at a

distance, and a hut of boughs is erected within gun-shot to conceal the sportsman, while he lies in wait for the arrival of his game. The thrushes, jays, and magpies, in such cases, are usually the first to descry the owl, and give intimation of his presence to the ravens and hawks; the eagles, if there be any in the district, being in most instances the last to arrive. But when they do come, they are no less eager than the smaller birds, to swoop down from the air to gaze at the strange bird, and to threaten him with voice and wing, for intruding himself into day-light. Then is the moment for the sportsman to level his piece, loaded of course with ball, and bring down the bird."

After passing over seven interesting papers, which were too lengthened for our purpose; we found one translated from the French, written by Col. Bory de St. Vincent, on

THE COLOUR OF THE SEA.—"Those who have been accustomed to a life confined in the interior of countries, where only rivulets and shallow rivers flow, where clear fountains rise, or muddy currents roll along, view with admiration the first appearance of the sea, as from the shore they regard the pure and sparkling green complexion of its waters; a colour which, indeed, seems peculiar to itself. The wonder is increased, when a portion of its water, passed into a vessel, is observed to retain no trace of that very peculiar colour, and to be perfectly clear: Its transparency is such, that in places undefiled by filth and dirt, the sand may be distinguished at the bottom of its bed at a considerable depth, and stones and shells of the smallest size, which lie there, appear then bright and resplendent. Marine plants, especially the collarinies, beam in it with the greatest splendour; and all productions of this nature elegantly shaded, whilst they are sunk beneath the surface of the water; but as soon as they are taken out, this beauty vanishes. * * In proportion as a vessel becomes distant from the shore, and we reach the high latitudes, where the depth increases more and more, the green tint changes into a blue tint, and in the open sea, the water becomes, at fifty or sixty fathoms, of the finest azure colour. The green shade generally announces danger, or an approach to low coasts: for along those which are intersected with peaks or mountains, and near which the sound descends to a great extent, the blue azure is observed to appear, and to become much more lively, as the depth becomes more considerable. But this blue, which is ordinary regarded as one of the characteristics of the ocean, and which is commonly attributed to the manner in which the rays of the sun become decomposed, as they penetrate into the waters, is not, however, exclusively peculiar to it; every large and deep bed of water has a cast of a similar nature."

After twelve more pages of interesting matter, follows a Translation of Le Vaillant's Birds of Africa, which is continued in every number, and commences with an account of

THE GRIFFARD.—(*Aquila armigera*, Ren.)—"The African eagle, designated the Griffard, is nearly equal in size to the Great or Royal Eagle, (*Aquila aurea*, Bris.) but he has longer and more muscular legs, and stronger talons. Various species of small gazelles (*Antelopes*) and hares, form his ordinary prey. Pouncing upon the former, he kills them with great ease, and in a manner that shows the great strength with which nature has endowed him. His courage is conspicuous in the hatred he shows towards all other birds of prey, which he pursues the instant he perceives them. If they offer any resistance, he attacks them with ferocity, and obliges them to retreat, never suffering one to remain in the

district he has chosen for his domain. He is usually accompanied by his female mate; indeed, they seldom separate, and never fly beyond the boundaries of the domain which they have selected for their abode. They construct their eyry, not hollow, like that of other birds, but flat and platform-like upon the top of the highest trees, or amongst steep and inaccessible rocks. The Griffard's eyry is so firm and solid, that a man may stand upon it, without any apprehension of its giving way; and, in consequence of this solidity, it serves the same pair for a number of years. The base consists of several strong rafters of different lengths, according to the distance between the forked branches on which they are to rest. These rafters are crossed and every where interlaced with flexible boughs, which bind them firmly together; this forms the foundation for the edifice. Upon this is laid a quantity of brushwood, moss, dry leaves, ling, and also leaves of Liliaceous plants and flags, if such happen to grow in the neighbourhood. This second layer is covered with another, consisting of small bits of dry wood. The last layer, on which the female lays her eggs, consists entirely of soft materials. The eyry, thus constructed, may be four or five feet in diameter, and two feet in thickness, and is of an irregular form. It lasts for many years, and it may be, during the whole life of the same pair, if no danger has at any time presented itself, to induce them to change their place of habitation. When a district does not furnish a suitable tree to the Griffard for the construction of his eyry, he builds it among rocks. As, in this case, a foundation is not requisite, a bed of moss is placed immediately upon the rock, in which case, the eggs are invariably deposited among small wood, and never upon softer materials: This bird prefers an isolated tree for his abode, probably in consequence of his being very suspicious, and of his being desirous to observe what passes around him. On rocks, moreover, his brood is more likely to become the prey of several species of small carnivorous quadrupeds, which precisely because they are small, are the more formidable to him. The female Griffard lays two perfectly white, nearly round eggs, about three inches and a few lines in diameter. While she is sitting, the male attends to all her wants, and provides also for the young when hatched till they can be left without danger; but afterwards, when they are increased in growth, they require so much food, that the parent birds are both obliged to hunt for them, in order to satisfy their insatiable appetites. * * * While these birds remain perched, they utter shrill and piercing cries, which are heard afar off, mixed every now and then with hoarse, mournful notes. They frequently also utter similar cries when on the wing, and while they are at the same time at so prodigious a height as to be undistinguishable by the eye. * * * The female is eight feet seven across the wings from tip to tip, and the male only seven feet five inches. * * The colours of both are nearly the same, except those of the male are a slight shade deeper on the wings. * * All the under part of the body, from the throat to the tail, including the legs and shanks are of a beautiful white. The feathers covering the top of the head, and the back and sides of the neck, are white at the base, and of a greyish-brown towards the point. The feathers about the cheeks, and some part of the neck, are very agreeably speckled with brown and white. The back and tail coverts brownish, all the mantle (manteau) is of this last colour, but each feather is bordered with a paler tint; the large wing feathers are black, the middle ones are striped across with dull white and brownish black; the last feathers have a white border at the point. The tail is striped in the same manner as the middle wing feathers."

The number then closes with a chapter of Varieties or Scraps, and facts gathered from various quarters. These extracts will serve to show its nature, and tend to prove what we before advanced, viz. that it is an interesting and instructive Work.

EXTRACTS.

HORTICULTURAL INTELLIGENCE.

CULTURE OF VINES WITHOUT POTS.—Mr. Bowers, Gardener at Heskfield Place, Hartford Bridge, Hampshire, treats his pines in a similar manner to that described by Mr. Mitchinson, page 5, only instead of turning the plants out into the mould he plants them six inches deep in half decayed leaves; they root well in the leaves, and the suckers also make good roots before taken off. By this treatment both fruit and suckers are obtained much finer than when fruited in pots; and there is much less expense and trouble during the fruiting season, as no heat is given into the pit after they are planted out. They never require any water, except syringing over them in a high temperature.—*Gard. Mag.*

PIT FOR EARLY CUCUMBERS, AND A MODE OF CULTURE.—Let a three light pit be made of the usual size, and having the appearance of M'Phail's plan, except in the open work being stopped up; the flues to be continued round the sides of the pit, and the other flue to go under the bottom lengthwise in the middle, but no cross flues, as in M'Phail's plan; the sides of the flue in the bottom of the pit to be filled up with broken bricks or stones, to make it level; the top of the pit, and the lights, to be as in general. Next, opposite the two rails, about five feet from the front of the pit, let two wooden trunks be sunk in the ground till they come to a level at the top; the height of the trunks to be about 18 inches, the space in the middle to be about 5 inches square. Then let two leaden pipes be laid from the pit to each of the trunks, one end of each pipe to enter the trunk about half way to the bottom, the other end to be applied to the pit; each pipe to emerge from the ground about 18 inches before it reaches the pit; then with an easy turn let each pipe be carried up the side of the pit; one pipe from each trunk to enter the upper part of the flues; the other two to enter above the flues, one under each rail that supports the lights. Next, let there be two pieces of small pipe, about two feet long; let one of these pieces be applied to end of the pit near to the back leading from the upper part of the back flue to the top of the pit, the back flue being one brick higher than the others. The two front pipes that enter the flues, are to keep them constantly supplied with atmospheric air, and the small tubes at the ends are to take away the nocturnal vapour, which has no other means of escape. The other two pipes that enter under the rail are to convey warm atmospheric air among the plants, which is constantly passing into the pit, and escapes at the back of the lights, they being a little raised at the back, and a small piece of board being pegged up against it, to keep the cold winds from blowing under. Thus there is a constant supply of fresh warm air day and night. The size of the large pipes is an inch and three quarters, the small tubes are three-quarters of an inch.

CULTURE OF CUCUMBERS.—When I sow my seeds, I use a small rack suspended from the rails, that support the lights with some pieces of board on it; the seed-pot being placed on it, remains till the seed has come up: the plants are then potted off, and placed on the suspended rack, till it is time for them to be turned out of the pots; they are then transplanted into small hills of earth on the suspended racks, with bricks laid flat to keep the earth together; and as the plants grow, they are supplied with fresh earth. Cucumber plants managed this way, do much better than in the usual way of ridging out on the earth in the pit; for they grow stronger and more healthy, and show fruit much finer and better. Just before the fruit is in bloom, the plants are removed from the suspended rack, which is done by placing a hand-glass over the plants on the rack; then having the lining levelled by the side of the pit, lift the suspended racks out of the pit, and place them on the lining, clean out the top earth that is in the pit, scald the sides with hot water, and put in a sufficient quantity of warm fresh earth; next take off your hand-glass, and, having two sticks, place one under each end of the boards that have the plants, and gently take them off the rack, and place them on the fresh earth in the pit where they are to remain; then, by placing a small piece of board against the earth that contains the plants, (the bricks having been removed,) gently draw away the two outside boards; the middle one is drawn out endwise, it being divided in the middle, and in that part rests on brackets attached to the two outside boards. By this method they may be ridged out when in bloom, and fruit cut the second week afterwards, and are not subject to the attacks of wood-lice. The boards that are put on the suspended rack are three, of a breadth which forms a square; the middle board being divided across the middle, which make four pieces: the rack is suspended by four pieces of chain, which hook to any height that may be required.—EDWD. ELLIOTT.—*Gard. Mag.*

FLORICULTURAL INTELLIGENCE.

CULTURE OF THE ORANGE-TREE, IN ENGLAND.—After having procured a quantity of good seed from the common Citron, sow it about the middle of February, or beginning of March, at the latest, in twenty-four sized pots, filled with rich light mould; covering it half an inch thick with the same sort of soil, and spread a little moss over the top, to keep the mould moist. Plunge your pots in a hotbed, previously prepared for them, of about 70 to 75 degrees of heat, taking good care not to let the heat sink below that temperature. In a few days the plants will make their appearance through the moss, after which a little air must be given them when the weather permits. As soon as they attain the height of five or six inches, which, if properly managed, will be in five or six weeks after they are sown, pot them in sixty or small forty-eight sized pots, taking good care to drain the pots well, which is a very necessary thing towards the growing of any plant well, and especially orange trees; after which, plunge the pots in the hot-bed as before, taking good care that the bottom heat is not too violent for their roots, and keep a steady heat, so as not to let them get in any way stunted in their growth, and by the month of July, the greater part of

them will be ready for being engrafted. Prepare a gentle hot-bed in a shady situation; or, if that cannot be conveniently done, turn the back of the frame towards the south; then graft the plants, which may be performed in various ways with equal success; but the manner to be recommended is cleft grafting, as the scion heals over the wound much sooner than by any other way. Take off the top of the scion before inserting it in the stock. At this time much care is required to keep up a proper heat; and that the plants be shaded with double mats, for the clear sun will often cause a complete failure. When they have properly taken, admit a little air; but it must be sparingly at first. If convenient, keep the plants in a frame during winter, and take good care not to over-water them. If, about the beginning of April, a little dung heat be given, to set them growing, they will benefit much by it, provided plenty of air be admitted, to prevent them growing weak. If one shoot be likely to take too much the lead of the others, pinch off the top. The orange-tree does not require to be shut up in a house, like stove plants, but ought to have plenty of air at all seasons, and in summer, should be put out early in the season.—R. S.—*Gard. Mag.*

ON THE CULTURE OF THE CARNATION.—In September take the layers off the old plants, and pot them two in each forty-eight sized pot, in soil composed of one-half leaf soil, and one-half coarse pit sand approaching to grit. Before placing the plants in the pots, give a good drainage by plenty of potsherds. When potted give a sufficient watering, and place them, exposed to the mid-day sun, in a frame filled with old tan so high, that it will just admit the pot and plant to stand on the surface, and not touch the glass. Shut them close down, and shade them for a few days, until recovered from potting; then begin gradually to give air, and increase it till, in dry warm weather, the lights may be entirely taken off; take care to close them down again before the evening dews fall, and preserve them at all times carefully from excess of wet, or mildew, and canker will infest, if not destroy the plants. Follow this mode of treatment until November or December, giving a little water to those which appear dry. When severe weather sets in, keep the lights completely closed; but when the weather changes and days lengthen, give air as before, until the latter end of March, when for a few days before final removing, give full air night and day. In potting, place a single plant in each thirty sized pot for blooming; the soil used, is composed of three-fifths decomposed leaf soil, one-fifth coarse pit sand or grit, one-fifth road-scraping from a limestone made road, or the subsoil or paring next the stone used for lime; these ingredients should be well mixed and exposed to the frosts of winter, and be frequently turned, at the same time carefully picking out all worms, wireworms, &c. fill each pot with about one-sixth of well broken potsherds to give a good drainage, place a little of the coarsest soil upon this, and place one plant in each pot, reducing the old ball a little, so that the roots, when finally placed, may just be within the rim of the pot, not deeper; then fill up with the compost, and plunge the pots in the ground where they are intended to bloom, the rim being just covered with air. Before plunging, lay a small portion of soot in the place where each pot is to stand, this prevents the entry of worms, &c. This method is preferable to growing the plants, either in large pots to stand on the surface, or in the open ground. In the season of layering, place an inch thick of fine sandy soil round each pot, in this the layers will readily strike root.—WM. MAY.—*Trans. Hort. Soc.*

NEW AND VERY RARE PLANTS, figured in the Periodicals.

CLASS I.—DICOTYLEDONOUS PLANTS, OR EXOGENES.

ANACARDIACEÆ.—The Cashew Tribe.

DUVAUA OVATA.—Ovate-leaved Duvaua. An evergreen shrub with bright shining leaves, emitting, when bruised, a grateful scent. Native of Chili, whence it was lately introduced. Flowers small, pale yellow. Culture—It is about as hardy as the myrtle, and will, therefore, in the northern parts of England, require the protection of a frame or greenhouse, but in the south, it will grow in any soil or situation which is dry in summer, and well drained in winter. If trained against a wall, and sheltered by a roof of thatch in the winter, they succeed perfectly. They may be propagated by cuttings of the ripe wood, struck in sand under a bell-glass, in a gentle heat.—*Bot. Reg.*

PAPAVERACEÆ.—The Poppy Tribe.

PAPAYER PERSICUM.—An annual, probably of little value to the Gardener, in consequence of its petals being so quickly deciduous. Received by the Horticultural Society from Mr. Otto, of Berlin. Flowers red. Culture—It is hardy and requires similar treatment to other hardy annuals, it is readily propagated by seeds.—*Bot. Reg.*

ACANTHACEÆ.—The Justicia Tribe.

CALOPHANES OBLONGIFOLIA.—Spotted flowered Calophanes. A dwarf perennial with rich azure blue flowers. Native of Carolina, whence it was lately introduced by Mr. Dennis. Culture—This is by far the prettiest of the extra-tropical Acanthaceæ, and is really an interesting addition to our hardy border flowers. It requires to be planted in a mixture of loam and peat, and is readily increased by parting the roots.—*Sw. Fl. Gard.*

SOLANACEÆ.—The Nightshade Tribe.

WITHERINGIA PURPUREA.—Purple Flowered Witheringia. Native of Chili, whence it was sent by Mr. George Eglington to Messrs. Loddiges, in 1829. Culture—They should be preserved in the greenhouse potted in rich loam. The root is a small roundish tuber, which produces several trailing branches, and those taken off strike root readily, and form plants.—*Bot. Cab.*

SCROPHULARINÆ.—The Figwort Tribe.

SCHIZANTHUS PINNATUS *humilis*.—This excellent variety was raised from seed, sold in London last spring by Mr. Cuming, and flowered at the Compté de Vandes, at Bayswater, in June. In all its habits it seems to agree with the species to which it is referred. Flowers lilac and rose, very handsome.—*Bot. Reg. for Feb.* Culture—A hardy annual, growing from six inches to a foot high, and will thrive in very common light soil. It is propagated by seeds.

ONAGRARIÆ.—The Evening Primrose Tribe.

CENOTHEA CONCI'NNA.—Pencilled Tree Primrose. A dwarf annual with pale rose coloured flowers, elegantly pencilled with branching veins of a deeper tint. Native of Chili and was introduced last year, from seeds collected in that country by Mr. Hugh Cuming. Culture—It requires the same treatment as other hardy annuals, and is very easily propagated by seeds.—*Sw. Fl. Gard.*

MYRSINÆ.

MYRSINE CAPITELLATA.—Cluster-flowered Myrsine. A tree growing in Nepal, its native country, from thirty to forty feet high, and according to Dr. Wallich, the wood is greatly esteemed by the natives for various carpenters work, also the ripe fruits are eaten. Introduced in 1828. Flowers small, yellowish green, and without ornament.—*Bot. Mag.* Culture.—It requires the stove, should be potted in loam and peat, and may be propagated by cuttings.

LOASÆ.

BARTONIA ALBE'SCENS.—White-stalked Bartonia. An annual with white flowers, rather curious than ornamental; it was raised by Mr. Lambert from seeds received by Mr. Cuming. Native of dry water courses in the province of Mendoza, where it was discovered by Dr. Gillies. Culture.—It is hardy but should be raised in a frame, in order to get it into blossom sufficiently early to perfect its seeds.—*Sw. Fl. Gard.*

CLASS II.—MONOCOTYLEDONOUS PLANTS, OR ENDOGENES.

ORCHIDÆ.—The Orchis Tribe.

ONCIDIUM HARRISONIANUM.—Mrs. Arnold Harrison's Oncidium.—This very distinct species, was discovered on the Organ Mountains of Brazil, by Mr. William Harrison, of Rio Janeiro: It is distinguishable by its fleshy, slightly channelled recurved leaves; each of which is placed upon a little pseudo-bulb, not much bigger than a sparrow's egg, but round and shining. The flowers are yellow, marked with rich velvety brown, the panicles grow about a foot high, and are arranged in a graceful manner, something after the way of the *O. flexuosum*. Culture.—It should be potted in moss and rotten wood, and placed in a warm part of the stove, and may be increased by division of the roots.—*Bot. Reg.*

LILIACÆ.—The Lilly Tribe.

CALOCHORTUS LUTEUS.—Yellow Calochortus. This plant was discovered by Mr. Douglass, in California, and a few roots of it were received from him by the Horticultural Society, in 1831. Its flowers are yellow, expanding in September and October, and remain without fading for a week or ten days. Culture.—It is hardy, and appears to succeed perfectly in a north border in sandy peat. From the lateness of its flowering, it is not likely to produce seeds; it is, therefore, hoped, it will produce sufficient offsets for propagation.—*Bot. Reg.*

IRIDÆ.—The Cornflag Tribe.

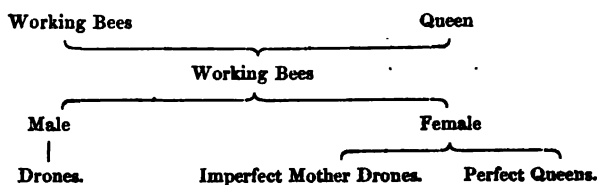
GLADIOLUS PUBERUNDUS.—Blush-flowered Corn-Flag. A handsome hybrid, raised by the Hon. and Rev. Wm. Herbert. Flowers large, of a brilliant rose-colour, and very showy. Culture.—It will doubtless require similar treatment to the *G. cardinalis*, and like it, readily increase by offsets.—*Sw. Fl. Gard. for January.*

SMILACÆ.—The Smilax Tribe.

LEDEBOURIA HYACINTHINA.—Hyacinth-like Ledebouria. A little bulbous plant. Native of the East Indies. Dr. Wight says, it is very abundant at Malapattam. In the neighbourhood of Alamparau it is also common, growing in moist pasture-grounds, where the ends of its leaves, which curve backwards, touch the soil, take root, and produce new bulbs.—*Bot. Mag.* Culture.—It will no doubt, require the stove, and will probably grow in peat and loam, and may be propagated by offsets.

NATURAL HISTORY.

ON THE POWER OF THE COMMON BEE TO GENERATE A QUEEN.—(*Continued from page 137.*)—The system fell to the ground, upon the attack of Hummel and others; but another theorist immediately rose up, in the person of the celebrated Strube, who, taking advantage of the light thrown upon the natural economy of the bee by his predecessors, considered, that by the following system, he had reconciled all their contrarieties, and removed all their obscurities:—



According to this system, the Queen, with a *double-branched ovarium*, lays male and female eggs; the male eggs are placed in the small cells, and in the first part are bred working bees; the female eggs, however, as soon as the bees have brooded some of them in acorn-formed cells, become Queens, which can breed both sexes, and from them spring the principal race of all the chief mother bees. The majority, however, of these female eggs are placed in small cells, and are bred as degraded Queens. The remaining part of the working bees, are those which, in the end, are only able to breed drones. The fructification of the Queen is performed by the male working bees, and not by the drones: the drones, which are bred in the middle of the month of May, derive their existence from the degraded Queens. The ovarium of these female bees, cannot properly develop itself in the small cells; independently of which, they are in their nature considerably weakened. The impulse to breeding thereby becomes greatly moderated; and it is only in the warm months, that the freshness of the honey, and the heat of the hive, instigate these weak imperfect mothers to propagation.

They mingle with the few drones which are at this time to be found in the hive, and contribute to the population of the republic. The eggs from which the first drones arise, are laid towards the end of autumn, and, as during the winter, they lie beyond the central heat of the hive; they do not develop themselves before the spring. It is only when there is a deficiency of male working bees, that the Queen is fructified by the drones.—R. HUIST, Esq.—*Mag. Nat. Hist.*

BLUE COLOUR OF THE SKY.—As the atmosphere extends upwards, its density becomes gradually less and less, and of course its power of reflecting the sun's rays in like proportion diminishes, till at last, at the extreme verge, when it terminates, there is no reflection at all, or total darkness. The extreme strata then being most rarefied, have the least powers of reflecting the rays of light, and the light thus reflected is of a bluish tint, or consists principally of the blue rays. In this manner, a dark-brown mountain, whose surface has small reflec-

tive capabilities, when seen at a distance, has a deep-blue appearance exactly similar to the atmosphere. It cannot be the medium of the air, through which it is seen, that renders it of this colour; for if part of the mountain be covered with snow, which has strong reflective powers, this snow is still seen of a pure white colour. It has been ascertained too, that the atmosphere, when seen from the top of a very high mountain, has a deep-blue tint, approaching to black, and this tint becomes deeper the higher you ascend. It may be observed also, that the centre of the atmosphere, looking perpendicularly upwards, always appear of a deep blue colour, which gradually passes to a white appearance towards the extreme verge of the horizon, or in the lower strata next the earth. Here most dense air is accumulated, and here the reflection is most perfect, or nearly approaching to white light; whereas, perpendicularly overheard the rays of light pass through less of this air, the reflection is fainter, and hence the deeper blue colour.—W. RHIND.—*Field. Nat. Mag.*

OBJECTIONS TO THE RECEIVED THEORY OF RAIN.—It is the received opinion, that rain is caused by the heat of the Sun's rays raising the water in a state of vapour, into the higher regions of the atmosphere, and being there condensed by the cold, descends again, and thus forms rain.

Objection First.—That water requires a heat equal to sixty degrees of Fah. thermometer, to raise it into vapour, according to the commonly received opinion, when experience proves that we have the most rain when it stands below temperate, which is 55 degrees; for instance, the snow in frost, and the rain after.

Objection Second.—That when we have the greatest heat, with the largest loss of water, we have the least rain, as witness every dry summer.

Objection Third.—When vapour is condensed into water, which it must be, if exposed to an atmosphere colder than itself, it must immediately descend, as witness the dews; it being the heavier in its specific gravity than the bulk of the surrounding atmosphere. Therefore, were water raised into vapour, by the heat of 300 degrees, it must be immediately condensed by the sudden change of temperature, and descend before it had risen to the height of one hundred yards, much less rise into the highest regions of the atmosphere, and remain there for a length of time, and then form clouds, and so produce rain, as witness the steam arising from the boiler of a steam-engine, or the refrigeratory of a common alembic.

Objection Fourth.—Experience has proved that we have the most rain in nights, and in winter, when of course it must be the coldest, as then the Sun has the least influence.

Objection Fifth.—There is no vapour arises from the water when the Sun has the most influence; for place a looking-glass over a river, when the Sun shines with his meridian force, and it will not so much as dim it; but when the Sun is gone down, the vapour rises so as to be visible.

Objection Sixth.—If the old theory was true, there would always be the most rain in the tropics, where the Sun is vertical, which is not the fact.—*Field's Naturalists Magazine.*

PART III.

MISCELLANEOUS INTELLIGENCE.

I.—QUERIES AND ANSWERS.

TALC, A SUBSTITUTE FOR GLASS.—In compliance with your request, and for the information of a "Subscriber at Hastings" Vol 1, page 427, I beg to say that Talc may be bought at Knight's, in Foster lane, Cheapside, where, about three months since I purchased a piece about seven or eight inches square, and one eighth of an inch thick, for six shillings and sixpence, being after the rate of twenty shillings a pound; it will separate in flakes as thin as paper, but not thinking that it would answer my purpose to use for glazing a two-light frame, which I had then just made, compared with glass at 3s. 6d. per gross, for sizes 5 by 3, and 6s. 6d. for 6 by 3, I determined not to use it, and ultimately used the glass. I have been looking some time in expectation of a communication from *Electricus*, page 337, and 473, on his economical method of building small Forcing Houses, &c. I should be glad if any of your correspondents would inform me the best sort of paint in regard to durability, and expence for frames, and other exposed wood work.

HORTICULTURIST.

SCARIFYING FRUIT TREES.—I am not surprised that your correspondent "G. A. L." should pronounce the reasons assigned to him for the performance of this operation, "puerile, contradictory, and worthless in the way of argument," if this were adduced in support of any thing like a general practice. I am perfectly aware that the gardeners do occasionally divide the bark of some trees, perhaps of the cherry tree almost exclusively, by making a perpendicular incision the whole length of the stem. But this operation which G. A. L. considers as an outrage; and contrary to the principles of science, is, I think, of rare occurrence, and never performed by really able men, excepting in the case of diseased action.

This it is well known, takes place in the vegetable, as well as in the animal economy. The regular progress of a healthy young tree implies the formation and deposition of two new layers annually. A new layer of soft or sap wood (alburnum) is deposited upon, and exterior to the wood of the preceding year; and a new layer of bark, (liber) is placed within the last formed layer of bark. Thus the bark increases inwardly, and the wood enlarges outwardly, in as much as refers to all the depositions of former years, the two new layers being in juxtaposition, or close contact, the one with the other. Now if by disease (for such it must be) the outer and older layers of bark become so indurated and unyielding as to cramp the interior of the tree, and impede the deposition of the two new strata, the progress of the plant must be arrested. The tree in this case ceases to enlarge; it assumes a constricted and unhealthy appearance, and is in a state which gardeners term hide-bound. Hitherto no other remedy has been found effectual than that of dividing the bark; and the operation, viewed physiologically, can, I think, be justified by two considerations. The first is, that space is immediately afforded by the gap or opening caused by the elasticity of the bark,

and the second that the stimulus exerted by the vital energy of the tree tends not only to heal the wound, thus giving enlarged bulk to the trunk, but at the same time to distribute those elaborated juices which ultimately constitute the cellular structure of the new concentric layers. The office of every bud is to send down fibrous processes; and then fibres constitute the major part of the hard and woody parts of the stem.* It will then be evident that if constriction prevent the progress of their fibres, the buds cannot make a healthy advance, nor can any stem increase duly in size. As to giving a vent to the exuberance of the sap, the assertion is indeed puerile, and unworthy any man pretending the slightest knowledge of the vegetable structure. G. I. T.

RHUBARB PLANTS.—The reply solicited by "Rhea" page 813, Vol. 1, may I conceive be given without much difficulty. "Rhea" may be assured that the change in the quality of her Rhubarb was occasioned solely by the unseasonable as well as too liberal and protracted abstraction of the leaves. These organs are the vitals of the plant, they laborate and convey all those perfected juices which are deposited in the roots, and become the pabulum, life-blood, as well as source of the next year's developements. Rhubarb, as Dr. Bevan has observed, should not be cut during the first year; but if it be so cut, or rather pulled, the practice should be continued in only for a very limited time in the spring. If the leaves be removed, not only throughout the summer, but even till the close of October, the roots must be impoverished; and having received little, or no new proper juice from the summer leaves, cannot be expected to produce fine full buds, and large foliage in the succeeding spring. This fact is taught by philosophical science, and confirmed by positive experience. To do Rhubarb justice, the first developed leaves only should be employed; and all that are protruded after June ought to be left till they decay naturally. In the winter a good coating of suitable manure, should be laid all over the bed, and the plants I think should rest untouched for one year. If 24 plants of the scarlet Goliah were arranged in four rows, the plants four or five feet apart, the rows might be cut in alternate succession: that is, twelve plants might be cut as one year, and the other twelve in the year following, with a certainty of ample supply.

LIST OF PLANTS.—I think you might prepare two very good articles containing a list of flowers and flowering shrubs for the whole year. There are two books, the *Flora Historica*, and the *Sylva Florifera*, which would furnish nearly all the materials if properly abridged. People in the country who like gardens, would feel much obliged by it; you have a list of new and beautiful plants. I want a list of old and beautiful ones as well, the new are dear, the old are cheap and quite as good. The *Horticultural Register* would do much good by giving lists from time to time of the plants and trees sold at the different nurseries, together with their prices; every great nurseryman publishes his list annually, and several of them might be formed into one list, or three or four columns might be made, shewing the difference of prices, in various parts of the kingdom. A list of the chief Nurserymen, and Florists, a list of the second-rate Nurserymen, of

* See Dr. Aikin's remarks on the descending fibres of the buds, in his calendar of the year, for April. Professor Lindley's observations on leaf-buds at at page 26, numbers 99, 100, and 101, of his recent valuable "Outline of the first Principles of Horticulture," and also his very interesting paper on the anomalous structure of the trunk of an exogenous tree, at page 476, No 3, of the *Journal of the Royal Institution*, May 1831.

those who raise large quantities of seedling timber trees to supply the trade, of those who are remarkable for any particular flower or plant, of the principal seedsmen, of the principal makers of Horticultural instruments and implements, not confining them to London, or its immediate neighbourhood. The prices also of the more common flowers and seeds with which Covent Garden is supplied, in the same way as we often see the price of vegetables mentioned, would be very desirable. In an article in your last volume, p. 593, I observe you speak of the Birch. I think I have discovered that the Birch unlike the Ash &c. never makes a good head if it is lopped. Your correspondent says the Fir should be felled in summer, how is it in the great Fir timber countries; I wish some of your correspondents could find out some use for the small poles of four inches diameter of the Scotch Fir. Would it be possible to make charcoal of them? I have heard that the charcoal of the Pitch Pine is found to destroy the flavour of Rum when distilled from it, and to make it perfectly good for the use of gin and brandy makers.

A. B.

II.—NOTICES AND ANTICIPATIONS.

GROOM'S SUPERB DWARF BLUE PEA.—The very excellent character given to us of this Pea has induced us to give it publicity. We calculate it will be found a great acquisition, and well worthy of a most extensive cultivation. It grows about a foot high, fans very much, produces a very large crop, boils greener than any other sort, is superior in flavour, according to the judgment of all who have tasted it: and has the advantage of being fit for use long after it has arrived at its full size, consequently continues in perfection much longer than any other.

PHILOSOPHICAL CONVERSATIONS; in which are familiarly explained the effects and causes of many daily occurrences in Natural Phenomena. By F. C. Bakewell.

INTRODUCTION TO GEOLOGY.—Fourth edition, greatly enlarged with numerous plates and cuts.

III. NATURALISTS' CALENDAR,

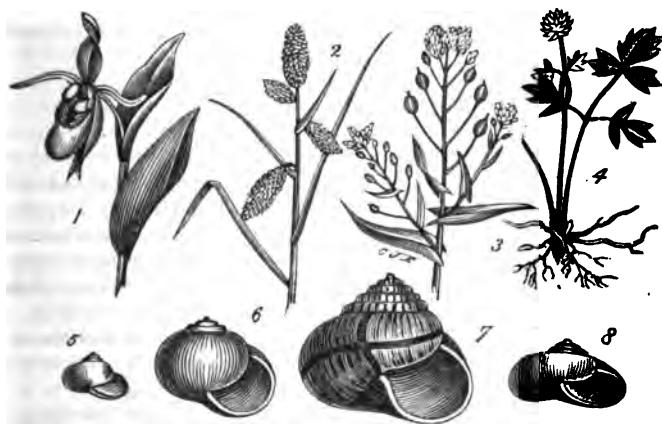
OR OBSERVATIONS ON NATURE FOR APRIL.

APRIL, although a very pleasant month, is generally subject to many changes. It is often ushered in with cold easterly winds, which tend to check vegetation, and prevent the losses which might otherwise be sustained by the warm, sunny, and showery days, stimulating the buds and blossoms to open, before the spring frosts are sufficiently subsided to insure the setting of a good crop of fruit. Amongst the multitude of plants adorning our fields and woods, may be selected the common Ladies Slipper (*Cypripedium Calceolus*) fig. 1. This is a very handsome plant with flowers of a purple and yellow colour, growing about a foot high, only thriving in shady situations, not uncommon in the dry woods of Derbyshire. It continues flowering until June. The *Carex pallescens* (2) usually abounds in moist pastures, and wet shady situations, it grows about one foot high. The *Camelina Sativa*, or Gold of Pleasure (3) grows about a foot high,

and bears yellow flowers, often plentiful, in cultivated fields, particularly amongst flax, with which it is often introduced from abroad. In some parts of Europe, it is cultivated for the seeds, from which oil is obtained. In woods, where the soil is of a light sandy nature, the *Adoxa Moschatellina* (4) thrives almost unnoticed.

BIRDS.—About the middle of the month the Nightingale, Black Cap, Redstart, and many other summer visitors arrive. We never yet met with an instance of the Nightingale having been either seen or heard in the High Peak of Derbyshire; last spring we heard one in a coppice near Derby, but we conceive even that to have been a solitary instance, notwithstanding in some parts of Nottinghamshire they abound, and their nests are not uncommon. The Black-cap is very common with us, and with his mellow notes, in some measure compensates for the absence of the Nightingale.

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MOLLUSCOUS ANIMALS.—In old walls and under hedges is sheltered the *Helix rufescens*, (5) the shell is nearly three-fourths of an inch in diameter, semi-transparent, varying in colour from pale ash, to rufous brown, often marked with paler or darker blotches, rarely pure white. The *Helix Carthusiana* (6) is not uncommon in chalky and sandy districts; it is about three quarters of an inch in diameter, thin and nearly transparent, of a pale yellowish white, or lead colour. Also in similar situations the *Helix Carthusianella* (8) may be found; the shell is about half an inch in diameter, more depressed than the last, and not so glossy; on the outside of the aperture is a milk white band. The *Helix Arbus-torum* (7) is not uncommon in moist, wet, shady places, it is about three quarters of an inch high, and about as much in diameter. Its usual colour is brown, marbled with yellowish spots, with a single blackish band winding round the middle of the lowest volution and continuing round the base of the rest. The colour, however, is rather variable, sometimes it is greenish-yellow with a pale band, and in other instances without a band, and marbled with white spots.

INSECTS.—Those who are not versed in the technical terms of Entomology, may spend many amusing hours in studying the habits of the more ingenious insects. The various species of ants, for example, are now busily repairing the damages which the severities of winter have produced upon their domiciles.

CAUSE OF SOUND EMITTED BY CYCHRUS ROSTRATUS.—Among the comparatively small number of insects which have the power of emitting voluntary sounds, *Cychnus rostratus* has long been known. The insect when disturbed or alarmed, utters a low, angry, hissing sound, distinctly audible at some distance. On the inner edges of the inflexed margins of the elytra, are two small grooves extending from near the base, to within a line or two of the apex, where they rather suddenly expand. The lateral edges of the plates, are, when at rest, lodged in these grooves; and it is by their friction, particularly of the last segment but one, which works in the widest part of the grooves) that the sound is produced. An imitation of it might be made by rubbing the edge of a piece of stiff paper in the channel. †

METEOROLOGY.—Dew appears only on calm and clear nights. It is never seen in nights both cloudy and windy; and if in the course of the night, the weather from being serene should become dark and stormy, dew which had been deposited will disappear. A clear morning following a cloudy night, determines a plentiful deposition of the retained vapour. When warmth of atmosphere is compatible with clearness, as is the case in southern latitudes, though seldom in our own country, the dew becomes much more copious, because the air contains much more moisture. Dew continues to form with increased copiousness as the night advances, from the increased refrigeration of the ground. ‡

VELOCITY OF LIGHT.—The velocity of the particles of light is truly astonishing, amounting to nearly two hundred thousand miles in a second of time, which is nearly a million times greater than the velocity of a cannon ball. It has been found by repeated experiments, that when the earth is exactly between Jupiter and the Sun, his satellites are seen eclipsed about $8\frac{1}{4}$ minutes sooner than they could be according to the tables; but when the earth is nearly in the opposite point of its orbit, these eclipses happen about $8\frac{1}{4}$ minutes later than the tables predict them. Hence then it is certain, that the motion of light is not instantaneous, but that it takes up about sixteen minutes and a half, to pass over a space equal to the diameter of the earth's orbit, which is at least 190 millions of miles in length, or at the rate of nearly 200,000 miles per second.||

SUNSHINE.—The quantity of Sunshine during February, is as follows:

1833	Morning	Afternoon	Total	Average Daily.
February.	11 hours	13 h. 45 min.	24 h. 45 min	53 min. 2 sec.

† Entomological Magazine. ‡ Domestic Gard. Manual. || Huttons Direc.

IV.—SOCIETIES,

CONNECTED WITH HORTICULTURE AND NATURAL HISTORY.

LONDON HORTICULTURAL SOCIETY.

The February Meetings although not remarkable for the display of any particular object of novelty or importance comprised many articles very creditable for the skill evinced in their cultivation. The principal matters observed were an Enville Pine Apple, weight 3 lbs, from Mr. George White, F. H. S.; a seedling Camellia of the Warratah species from Mr. T. Wells; a hybrid Amaryllis, *Cypridium venustum*, and the beautiful varieties of *Epacris*, *E. impressa*, and *E. nivalis* from Messrs. Chandler's nursery—fruit of the *Passiflora quadrangularis*, or *Grenadilla*, a collection of Camellias in which the *C. altheiflora*, *imbricata*, and white *anemoniflora* were conspicuous, and collections of apples and pears, the latter containing specimens of the Easter Beurre, which still maintains its rank as the best spring Pear, and of the Double de Guerre, esteemed for its qualities when stewed, besides possessing the merits of being a good bearer, a sound keeper, and very hardy. The communications read have been "on the cultivation of the Fig Tree," by Sir C. Monck. Notes on the Brabant Bellefleur apple, by J. Lindley, Esq., "on the growth of Dwarf Apple Trees," by Mr. T. Blake, F. H. S., and observations upon four French stewing Pears, cultivated in the Society's Garden, viz. the *Bezi d'Heri*, the *Bequene musque*, the *Chaptal*, and the *Double de Guerre*. The absence of grittiness, and high flavour of these varieties make them most deserving of a place in every collection.

Since our last report the first Meeting of the Society for the month of March has taken place at which the following articles deservedly excited much notice, viz. an *Azulea Indica*, from John Horsley Palmer, Esq. the blossoms of which were in such profusion that it called to mind the magnificent variety raised some time since by the Earl of Carnarvon, the colour of our present subject not being however so rich and vivid as the *A. Nudiflora*, var. *Thyrsoflora*; a specimen of the Ossage Orange (*Machira aurantiaca*) from Lord Stanley, on which also a paper was read from Mr. Wm. Skirving, of Liverpool; a hybrid *Rhododendron*, between *R. arboreum*, and *R. Catawbiense*, from Mr. Henry Burn, Gardener at Tottenham Park; some excellent bunches of Black Tripoli, Black Hamburg, and Charlesworth Tokay Grapes, from Mr. Robert Buck, F. H. S. and various sorts of Camellia and Cyllamen from Messrs. Chandler's Nursery.

From the Society's Garden, *Helleborus odorus*, hybrid *Azalea Indica*, *Thunbergia coccinea*, *Acacia decurrens*, *Rhododendron danicum sempervirens*, and a collection of Crocuses and Camellias were greatly admired. J. Reeves, Esq. F. H. S. also exhibited some models of the spouts of Chinese watering pots, and an improved Rose for those used in this country, its difference consisting in having the perforated end, usually fixed, made to fit on tightly as a cap by which means the conical chamber may be the more readily cleared of those substances, which by their accumulation prevent the flow of the water; the first named implement is formed of a tube stopped at the extremity, near which is a cut, about half way through, sometimes parallel to the end, sometimes at an angle, varying in width, according to the quantity of water required to be delivered.

Grafts of the Beurre Diol, Easter Beurre and Beurre rance Pears, and of the Boston Russet, and Brabant Bellefleur apples were distributed to the Fellows present.

Notice was also given that three Meetings would take place in the garden of the Society in the months of May, June, and July, for the display on an extended scale of garden productions, on which occasions Medals will be adjudged for the most meritorious contributions.

V.—MONTHLY HORTICULTURAL CALENDAR.

FOR APRIL.

In consequence of the exceeding quantity of wet weather since our last, the ground has been unfit to receive the different crops; where such things as were recommended for March are not done, let them be carried into effect without delay.

VEGETABLE DEPARTMENT.

Asparagus.—Fork and spring dress the productive beds, and plant new ones.

Brocoli.—In the beginning of the month, sow a small quantity of the *Tall large-headed Purple* for use in April next year, also some *Early Sprouting* to come in from November to February. About the middle, sow *Portsmouth* for use early next spring; and about the end, some *Green Cape*, *Early Purple Cape*, and *Grange's Early White* to produce from August to Christmas; also the *Siberian* for April and May next year.

Beans.—Plant *Windsors*, and *Longpods*, in rows three feet apart, to succeed those sown last month.

Cabbages.—Sow a good supply of the different sorts, for autumn use.

Cauliflowers.—Towards the end sow some seed, to produce from October to Christmas; and finish planting out those wintered in frames.

Carrots.—Finish sowing the *Long Orange* and *Altringham*, any time before the middle of the month.

Celery.—Sow a principal crop in a warm rich border, and prick out those raised last month.

Horse-Raddish.—New Plantations of it may still be made.

Kidney Beans.—Sow the *Early Buff* and *Cream-Coloured* in boxes, to plant out for the first crop; and about the end, a few may be put in a warm border out of doors in drills 2½ feet apart.

Lettuces.—Sow the different sorts twice this month.

Peas of all kinds may be sown to succeed each other.

Potatoes.—About the end, begin to plant out the late crops.

Raddishes.—Sow *Scarlet*, *Short-Top*, and *Red* and *White Turnip-rooted* twice, during this month.

Turnips.—Sow a moderate crop of early Dutch, to succeed those sown last month.

Parsley.—Sow the principal crop.

Spinach.—Sow the round-seeded once a fortnight.

Winter Greens.—Sow *Savoy*s, *Brussel Sprouts*, *Curled Kale*, &c. in the beginning, if not done last month.

Herbs of different kinds should be sown or propagated by parting the roots.

FLOWER DEPARTMENT.

Annals.—If not sown, should be done as early as possible. See p. 110, where their culture is detailed.

Carnations.—Plant the last year's layers in large pots, for flowering.

Pelargoniums and *Ericas* should now be propagated by cuttings.

Ranunculus planted last month, will be up in this; select a fine day to press the loose soil about the roots.

Tube-Roses should be planted, one root in each twenty-four sized pot filled with rich mould, and plunged in a pine pit or hot-bed.

Tigridia pavonia.—Sow the seed in pots or boxes; and plant out the old bulbs in sandy soil in a warm situation.

FRUIT DEPARTMENT.

Vines now introduced up the rafters in the Vinery, will ripen their fruit in August. *Vines* in pots now introduced, will ripen their fruit about the middle of July.

Apricot Trees will require looking over as soon as the leaves appear; and if the foliage is curled, or webs are seen, caterpillars are secreted in the buds, open the leaves and destroy them, or they will become troublesome.

Protect Wall Trees as they come in blossom.

Grafting may still be performed in the beginning of the month.

Mulch Newly-Planted Trees with some half rotted dung, to keep the sun and drying winds from injuring the roots.

Peach Houses.—If the fruit is beginning to stone, do not allow fire heat to rise above 60 deg. during night, and 70 during day, allow as much air as the weather will allow.

THE HORTICULTURAL REGISTER.

MAY 1ST, 1833.

PART I. ORIGINAL COMMUNICATIONS.

HORTICULTURE.

ARTICLE I.—ON THE VENTILATION OF FORCING-HOUSES.

BY MR. STAFFORD.

THIS subject requires the greatest attention of every person occupied in this description of buildings, for whilst the practice exists of erecting these houses with no other means of admitting cold air, than through apertures in the front, and driving the hot air through others in the back wall, the success will be very precarious, and disappointments often great. It is very plain, that, to admit air, often as low as 32 degrees, into a house when the temperature is 75 or 80 degrees, must necessarily be injurious when it comes in contact with the stems of the trees or plants, which are in so high a degree of excitement. The instant this takes place on the lower part of the plant, the sap which is in a very fluid state, becomes coagulated, and therefore impeded in its ascent, and so long as the action of this current continues, the fluids remain either stagnant, or becomes inclined to recede.

Nothing will exemplify this better, than to insert the tube of a goose quill into the trunk of a common *birch*, (which tree thrives nearer the north pole than almost any other.) If this be done during the time of circulation, and particular attention be paid to ob-

serving it, the sap, which during sunshine, will drop from the quill without intermission, will be found nearly to cease, by the mere circumstance of a cloud obscuring the sun for only a few minutes. Had the individuals who first introduced the methods of admitting air only through the front of houses, once given the subject proper consideration, they certainly would not have left the subject so much exposed to just complaint. If we send a man into the woods, to strip the bark from oaks at the proper season, although it may be the first day he ever did any thing of the kind, he is soon able to tell us, that the bark will not quit the trunk, should the wind change from south to north-east. There is no doubt, but the stems of trees and plants under glass, are much more susceptible of changes, than those grown in the open air. We must not look upon the tender foliage of plants, as the only seat of sensibility, but consider all parts of the tree liable to be similarly affected.

No method of giving air surpasses that of opening the lights on the roof; no sooner is one of these lights opened, than a stream of heated air rushes out, and is as forcibly met by a current of cold, endeavouring to enter and occupy the lower part of the house; the commotion occasioned by the ingress and egress, cause the cold and hot airs to intermix, and a proper medium of heat is the result. It is the very worst piece of philosophy to admit strong currents of cold air in front, to drive out the hot air through apertures in the back of a forcing-house, for this will always have a very injurious effect on vegetation, and be attended with a great loss of suitable heat. There is no occasion to ever admit air through the front, if the construction will allow of a proper convenience for its entrance through the roof. If a person took a lighted lamp, and held it in the lower parts of the house, and another individual opened a top sash, the vibration of the flame would convince them, that every part of the house was affected by the entrance of the cold air at the top.

No tree or plant appears to do well when acted upon by a current of air, this increases the difficulty of providing a sufficient quantity of underwood in many large woods.

All medical men prohibit their patients from subjecting themselves to the current of a window, and the strongest constitution cannot bear this long without injury. I venture to state, that no person can, at this season of the year, admit air in the front of his hot-house, without reducing the lower part below the desired degree of warmth, for the cold air is sure to compel the heat to escape, and will hold the place previously occupied by it; and although the top or back wall apertures may be contracted, so long as any portion

remains open, there will be a current, the pressure instead of diminishing, becoming only increased in proportion to the reduction of the apertures. It will always require considerable caution in opening doors, front sashes, or any other part of the house for air, particularly in the early part of the spring, when there is so material a difference betwixt the external and internal air.

One great objection to houses with quadrant roofs, is, that when the cold air is introduced through the front, and the heat passes through the back wall, there is a direct line betwixt the front and back ventilators, the heated air in a portion of the curve of the roof is therefore never displaced, and, as a natural consequence, the foliage is often destroyed by the action of the sun on the condensed vapours. To give exact directions upon this subject, appears almost impossible; every different formed house, will require some degree of different treatment in ventilation. I have therefore only explained, and pointed the necessity of preventing currents of air passing through houses devoted to the culture of fruits, for by admitting it from the roof, many injurious effects are entirely avoided. Many persons make a practice of throwing open the doors to give the first air in the morning; this system I condemn, and should recommend to be avoided. The *first air* should *always* be admitted through the top lights, in small portions at first, and afterwards increased as occasion requires.

GEORGE STAFFORD.

Willersley, March 11th, 1833.

ARTICLE II.

ON RAISING APPLE TREES FROM SEED.

BY J. C. K.

THE following remarks which I have here strung together, I would by no means be understood to put forth as a full reply to your correspondent "N.S." page 89, and am far from wishing that they should prevent the communications of other contributors, many of whom, without doubt, have it in their power to impart much more valuable information on the subject, but I would offer them as hints, towards supplying the information, of which he is desirous.

First then as to the seeds.—Unquestionably the best time to sow them is the autumn, immediately after they have been taken from

the fruit, for if delayed till spring, the greater part will be found to have lost their germinating power, if, however, he is determined to keep them, they must be mixed with sand and closed from the air; this occasions considerable trouble, if the pippins of different varieties, as they always should be, are to be preserved distinct.

In practising cross-fertilization, I adopt the following mode:—After selecting a few conveniently situated branchlets, in different parts of a tree, I remove all the blossoms, with the exception of three or four of the most promising, from which, a day or two before their expansion, I extract the anthers with a small pair of scissors, or tweezers, and cover each branchlet with a piece of thin gauze, taking care that no opening be left by which bees, flies, or other insects might gain admission, and thereby mar the experiment by bearing to the stigma the pollen of some variety, other than the one I may desire to employ. The gauze should also be rendered secure, so that the wind may not partially open it, or entirely carry it away. When the blossoms are fully expanded, and the stigma, by bursting, is ready to receive the influence of the pollen; it must be supplied by the application of a flower of whatever variety has been fixed upon as the male parent, and the gauze replaced until the fruit is set. As the fruit increases in size, if more than one or two remain, judge which gives the best promise of attaining perfection, and the rest remove; it will be advisable to distinguish each branch by a label affixed. The above, or some such method alone, can determine with any certainty which is the male parent; (or indeed there may be many, which, in a great measure, accounts for the diversity of the products obtained from seed of the same individual fruit) I adopt this same method in whatever experiments I undertake on the hybridization of plants, and am persuaded that by its adoption and a judicious selection of the parents a much increased probability is secured, that the seedling progeny will reward the trouble bestowed. Last year I gathered the first produce of some seedling strawberries, raised by cross-fertilization in a similar manner, and am looking forward to the result of subsequent experiments, which, from the success I have already attained, leads me to believe, will prove highly satisfactory. Two or three of the varieties obtained, (but one more especially) possess excellent properties of growth, fecundity and flavour, differ remarkably from any previous ones that have come under my observation:—but, enough, a year or two hence I shall be better able to pronounce on the matter. I shall not touch on the minor cares, though not less essential to success, that the young seedlings will require, as these no one who has dabbled in Horticulture

will be at a loss to supply, but will offer a few observations on the means to be employed in order to obtain in a short time the main object sought after, viz. the fruit. Here I will not stop to discuss the effects produced by grafting, deprivation of nourishment, ringing and flexure of the branches, further than to note that as means for the furtherance of this object, the two former methods are found as far as I know, or can learn from others, to be of no avail whatever while the latter unaided by concurrent operations, have but slightly superior claims to utility. Throughout the vegetable kingdom it is found that there is a certain point or degree of ramification more or less in different individual members, removed from the parent stem, previous to the attainment of which, a plant is incapable of putting forth fruit blossoms; the cause of this it were difficult to explain satisfactorily, it may be, and indeed has been attempted, but by no means with that incontrovertible certainty, that were desirable, and as it is not necessarily connected with my present purpose, the fact itself being indisputable, I shall not enter on it here; however it is well worthy of consideration, and its perfect elucidation would greatly aid in dispelling the darkness which still surrounds, as a well nigh impenetrable veil, the vital functions and operations attendant on the internal structure of plants, and of which it is the province of vegetable physiology to treat. Having ascertained the numerical amount of this requisite degree of ramification in conjunction with a knowledge of the habits of the plants, as to the number of successive shoots it protrudes in the course of the year, we may form a pretty accurate estimate of the length of time required, before it shall attain to a fruit-bearing state.

Thus, other circumstances remaining the same; the oak, did it not send forth two shoots, the one in spring, the other in autumn, would be double the long period it now is, ere it began to produce acorns. The exact number, however, cannot be ascertained, since all traces by which they might be computed are in the older portions of the wood entirely lost. It is by earlier inducing *this* degree in the melon, which is generally the second from the main stem, that the pruning or stopping is effective towards the accelerating the emission of fruit blossoms.

In the apple, the twelfth, and the pear, the eighteenth, are about the minimum number of degrees of ramification distant from the parent stem that are required ere flowers are put forth; that period, however, is often protracted. In computing these numbers, a shoot succeeding after a quiescent period, whether still projected in a line with the older wood, or at an angle from it, is equally considered as

a distinct branch ; there is, indeed, a knot at the junction, as much of the one as the other ; and it is the number of these knots by retarding the flow, or causing an accumulation of the sap, which would appear to bear some part in effecting a fruitful state. From these circumstances, the inference to be drawn, is, that if we can cause the formation of three or four successive shoots in the course of the year instead of one, or at the most two, (as would be the case, were the tree left to the course of its natural growth,) that we shall thereby anticipate by a half or two-thirds, the usual period of fructification.

With this aim then, it will be necessary to maintain the young seedlings by due care and judicious culture, in a vigorously growing condition, and two or three times, or even oftener, as the circumstances may warrant ; nip off, or prune back, the leading shoot, whereby at each operation a new branch will be protruded, which otherwise would not have been the case, until the succeeding spring. By a continued repetition, however, of these operations, an inconvenient number of diverging shoots will also be excited ; consequently, attention must be paid to regulating their number, by disbudding the branches accordingly, which will also infuse more vigour into those remaining. It will not be advisable to continue the stopping far into the season, otherwise the young wood will not have time to ripen, and the frosts of winter, by killing the newly-formed portions, will counteract the advantage obtained. By duly following this method, the usual period of fructification will be shortened with the apple, to and from the fifth to the seventh year, instead of the twelfth to the twentieth, and the pear in like proportion. I cannot here further developé this subject, but trust I have said sufficient to incite your correspondent, and mayhap some others of your readers to institute experiments founded on these suggestions. To those who feel an interest in these matters, and are at the same time conversant with the French language, I would recommend the careful perusal of the work of M. Sageret, entitled "*Pomologie Physiologique*," published at Paris, in 1830, where will be found a full exposition of this mode of practice, to effect the early production of fruit on seedlings, which I have so hurriedly and imperfectly touched upon above ; the whole work is moreover replete with interesting observations, the result of numberless experiments relating to a great variety of fruits, and some vegetables and ornamental plants. I do not find, that it has excited much attention in this country, and thence conclude, that it is but little known to the votaries of Horticulture, who will, I flatter myself, coincide in my opinion, that the mass of facts it contains are highly valuable, enhanced by their being solely

drawn from the personal experience of one individual, during a longer series of years, than usually falls to the lot of one to enjoy.

Any questions which your correspondent may desire to propose, through the pages of your *Register*, arising out of the foregoing observations, I shall feel a pleasure in replying to through the same medium, as far as lies in my power. I might have continued this to a much greater length, without mayhap increasing its value. So much connected with the matter crowds upon me that *appears* worthy of note, that I am at a loss where to choose, and shall therefore conclude.

J. C. K.

Levant Lodge.

ARTICLE III.

REMARKS ON GOOSEBERRY AND CURRANT TREES.

BY HENRY DYSON.

I OBSERVED last summer a great deficiency of fruit in this department, in the generality of gardens, over a considerable extent of the southern division of the West-Riding of Yorkshire; and probably such deficiency took a much wider range, than the limits of my circumscribed observation extended. I allude not to the quantity of fruit, but to its quality, which was greatly deteriorated by the filth, (vermin and caterpillars,) with which the trees were almost universally assailed; so that in many gardens, there was scarcely a leaf visible at midsummer, on trees of this description; whereby both fruit and trees suffered severely.

Trees of these kinds, (more particularly gooseberry's) having arrived at maturity, are very subject to foster a coating of moss on their stems and branches, which is not only injurious to the trees themselves, but is a sort of nursery for the ovaria of caterpillars and other insects, which in due time sally forth to their work of devastation.

As a simple and efficient remedy for this palpable defect, it is only necessary to make every branch of a tree thoroughly wet, by pouring on water through the rose of a watering-can, and then forthwith sifting about two or more pounds of quick-lime over the entire tree, which will remain on the stronger branches throughout the summer, perhaps half an inch thick, and most effectually eradicate the moss, together with the noxious embryo vermin it may contain.

The proper period for this plan to be put in operation is February to the middle of March, and where it is adopted, the luxuriant foliage, the trees will put forth and maintain, will forcibly strike the observer, and convince him of its efficacy : yet, where there are a great number of trees, from some undefined cause, there may be a slight attack of caterpillars, in which case it will be necessary to take a small and finely perforated dredger, containing white hellebore powder, and give a slight dusting to that part of the tree where their devastations have commenced, which will put an instantaneous stop to their ravages.

In stating the quantum of lime to be applied to a tree at two pounds, I beg to be understood, that I am speaking of those sorts of lime only, which possess the most caustic qualities ; such, for instance, as Warmsworth, in Yorkshire ; but in situations where lime of a more mild and fertilizing nature can be readily obtained, such, for instance, as Knottingley, in the same county, or Crich in Derbyshire, I would recommend shovelsful for gooseberry and currant trees, and barrowsful applied with an unsparing hand to every part of a kitchen garden. In most gardens, it is customary to apply frequent and constant dressings from the stable-yard, and to the utility of that plan, I presume there will be no dissent ; yet, where such course has prevailed for a series of years, a free application of lime will produce such stimulating and invigorating effects, as nothing short of demonstration can convey to the understanding.

HENRY DYSON.

Doncaster, Feb. 10th, 1833.

ARTICLE IV.

COMPARATIVE REMARKS ON WOOD AND METAL HOTHUSES:

BY MR. WM. BROWN, JUN.

I HAVE penned a few remarks founded on my own observation respecting the production of fruits in metallic roofed hot-houses. I think there is a great necessity that our more eminent experienced gardeners should bestow upon us, their candid opinions on the subject, for bringing their observations together, will be evidently the safest way to obtain a proper conclusion. Wooden houses, I am satisfied have the advantage of being more durable than metal ; but the latter admits double the light ; this accelerates the vital actions of

plants, for the more light, the better organic bodies perform their functions; the more light and air, the richer will be the colour, and finer the flavour of the fruit. Metal houses thus far possess superiority over wooden ones. I wish some of our scientific practical men would investigate the subject well, and set matters in a proper light, for it is to such men that we must look, who, from their great experience in horticulture, are able to direct us by their own actual observations. Although durability is certainly on the side of wood, yet if metal ones be erected on a proper principle, I have no doubt of their giving perfect satisfaction. For the growth of pines I think them exceedingly well adapted, the plants appear to perform their functions sooner, their fruit swells larger, and is of a higher flavour. The hot-water system I think preferable to fires, it consumes less coals, and is more convenient to the cultivator. There need be no fear of a deficiency of heat, I have seen the thermometer stand between sixty and seventy degrees, when the external air was nine deg. below the freezing point; this heat is also regularly given in every part of the house, and one fire seems to give the required temperature on a larger scale more regularly than two would according to the old system.

In writing the above I beg it to be understood that I am not governed by prejudice, I merely give a candid opinion founded on my own observations, I would advocate no system unless I thought its merits deserved advocating. This I imagine to be the case with metallic houses, if, however, your practical correspondents prove the contrary to be true, it will be highly satisfactory, not only to myself but to many others, who are also anxiously waiting to hear their decisions. We are perfectly aware of the durability and usefulness of wooden houses, of metal ones we are not. Yet I am led to believe from my own experience that they will be found superior, but I think that they should always be heated by hot-water. The yellow hue complained of by Mr. McMurtrie I have never seen, my pines have always appeared of a fine colour, and grown very vigorous. When this does appear I am inclined to agree with Mr. Stafford, volume 1, page 295, that the great evil exists in close glazing; it is true during the hot months of July and August, the leaves of the plants will assume a more red colour under metal than under wood, providing they be not shaded a few hours in mid-day; also when pines are brought from under vines in the summer, and placed under a metal roof, if they are not shaded the sun will burn their leaves, particularly if they have stood thick before their removal.

W. BROWN, JUN.

January 21, 1831.

ARTICLE V.

ON THE STRIPED HOUSAINEE MELON.

BY VIGORNIENSIS.

THE readers of the *Horticultural Register*, especially those who are fond of Melon Culture, are much indebted to "G. I. T." for his clear and elaborate account of the culture of the Housainee. It is still, however, in my opinion a question, What is the peculiar excellence of the upright system of training? and particularly, What is the advantage of planting in pots, when the same purpose is more readily and perfectly answered, by planting in the soil of the bed.

"G. I. T." seems to be under some misapprehension, as to the species called the Striped Housainee. He refers to the account given by himself in his first paper, as containing the correct description of the fruit, and condemns that of the Editor of the *Horticultural Register*, in the catalogue, page 880. The truth, I believe is, that both accounts are correct; there being two varieties of the Striped Housainee Melon, the one with *white*, and the other *red* flesh. *The former* was grown by myself last year, from seeds obtained from the London Horticultural Society, and I have this year received two packets, from the Venerable President of the Horticultural Society; one of which is marked by himself the "*White Fleshed Striped*", and the other the "*Red Fleshed Striped Housainee Melon*."

This I conceive will set the matter at rest, as regards these two varieties. The specimen grown by me last year of the Striped Housainee, answers in general to the description given in the catalogue. The flesh was white, and the weight between three and four pounds, but the stripe was yellow, which seemed to be the ground colour of the Melon, while the green was sprinkled over it in small spots among the reticulations, which were minute, ill defined, and imperfect, and unlike the net-work of the old varieties.

With respect to the Ispahan Melon, I beg to remark, that it *does* sometimes grow with green flesh, as I experienced last year from seeds undoubtedly genuine. This colour, however, I think is not natural to the fruit, and in the case referred to, it arose from its being stunted in its growth by too great a crop, and want of sufficient heat. It also lay on a brick, very near the light which, by a chemical process, may have changed the flesh from white to green; be this as it may, the fruit was of excellent flavour, and in every other respect a perfect Ispahan Melon.

VIGORNIENSIS.

ARTICLE VI.

ON MR. SEYMOUR'S SYSTEM OF TRAINING PEACH TREES.

BY MR. THOS. CAMERON.

BEING a great admirer of good Wall Trees, and having had a tolerable share of experience in the different methods of training; I hail with pleasure any communication tending to improve, or elucidate, their system of management, with these feelings I have read the communications, from the respective pens of Messrs. Harrison, Dyson, and others.

Mr. Harrison speaks unfavourably of Mr. Seymour's system, and some of his arguments are just; the rugged protuberances which he mentions, under proper management will not occur, but that the origin of the new shoot will be farther removed from the main branch, is most certainly true, but never so much so as to have an unsightly appearance.

Mr. Dyson's charge against the Fan system, is a very grave one, and requires mature consideration since it amounts to its total extinction. That Mr. Seymour's system is very scientific and uniform I allow, also, that I would adopt it in preference to many others; nevertheless, it is my candid opinion, that a greater quantity of bearing wood, may be obtained in the same space, and consequently larger crops, by the method of Fan training than by Mr. Seymour's. The tree figured in your last, as one of six years standing, has twenty-eight permanent or main branches, with but one line of bearing wood along their upper side; whereas, in a well trained fan tree, there would be fewer main branches, and considerably more fruiting wood at the disposal of the gardener.

Why the fruit should be larger upon Mr. Seymour's training, I cannot imagine; I have ~~seen~~ them both in perfection, and have never observed any difference in this respect; and I will venture to say, that if two trees in a healthy state were trained in the above methods, and the same quantity of fruit allowed to remain on each, there would not be the difference spoken of. Mr. Dyson stigmatises the fan system, as a heterogeneous mass of unnecessary branches, which opinion my experience enables me to controvert, nothing can be more beautiful than a well-disposed fan tree; for gardeners who manage their trees properly, are not in the habit of leaving unnecessary branches. Although there is *not* that mathematical precision, as on Mr. Seymour's system, yet there is an uniformity, which ren-

ders the tree equally beautiful ; and trees, when judiciously managed in the fan system, are certainly undeserving of that general censure. The nails and shreds being unsightly cannot apply to the system ; but to slovenly nailing, these persons would use unsightly shreds in Seymour's, or any other system ; and many gardeners would rather see the nails standing out from the walls in the winter season than have them driven in so far, which must injure the wall, whenever it might be necessary to draw them out. In vol. 1, page 676, a wash is recommended, composed of materials which will cause it to adhere to the walls and branches, to be used before and *whilst the trees are in bloom* ; I cannot discover for what purpose the blossom is to be coated with this solution. Most practical men recommend trees to be kept dry, whilst in flower. I shall feel exceedingly obliged to Mr. Dyson, or any other person, who will explain this to me.

I do not offer the above remarks from a mere theoretical or superficial knowledge, but from observation and practice upon trees which are not rivalled by any in the neighbourhood of London, (those upon Mr. Seymour's plan, were frequently seen by Mr. Seymour, jun. and pronounced perfect specimens,) neither do I offer them with a view to create controversy, but merely in vindication of the system of fan training, which I consider equal, if not superior, to any other practised.

THOMAS CAMERON.

March, 1833.

ARTICLE VII.

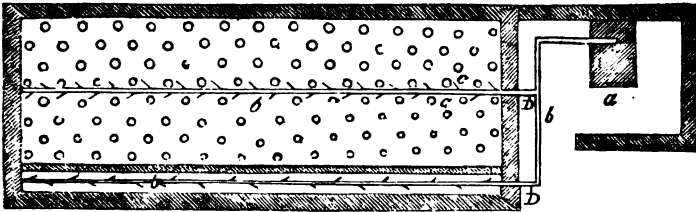
DESCRIPTION OF A PIT FOR GROWING CUCUMBERS WITHOUT DUNG THROUGHOUT THE WHOLE YEAR.

BY MR. JOSEPH HARRISON.

WE have built some pits at Wortley heated by steam, which appear to answer the purpose of bringing a supply of Cucumbers through the year. They have been erected at a small expence, and the cost of working them is also very trifling. Should your correspondent "Q. V." volume 1, page 475, approve of the plan, and wish for the particulars of the cost, and of the best way of proceeding with a similar erection, I shall be very glad to furnish them. The erection being simple any resident artizan will most readily accomplish the work.

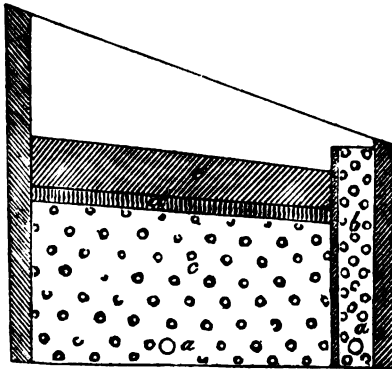
Reference to Ground Plan.—(a.) Steam Boiler. (b. b. b.) Pipes. These are constructed of cast iron, two inches diameter outside to outside; they are perforated along their sides with holes one quarter of an inch diameter as c. c., and half a yard apart hole from hole, to prevent the holes from corroding up, a copper bush is fixed in each hole. (d. d.) Stop-cocks to turn the steam off or on, as desired.

25



Reference to end sketch.—(a. a.)—Perforated Pipes. (b.)—Flue, which is carried from the ground to about eight inches higher than the surface of the soil inside the frame. This is for the purpose of affording top heat, and drying up damps when required. This flue has a pipe laid upon a row of bricks, and in a sort of open brick drain, the space of the flue above is then filled up with brick bats, previous to putting in of which, the flue is plastered at the sides. The coverers at the top are stone which are securely jointed.

26



(c) Is a Pit with a pipe laid up the middle, perforated as the other pipe in the flue, the pit is then filled with brick bats to the depth of two feet six inches. The materials in which can be heated

very quickly, and being in a confined situation, retain a sufficient heat for the purpose of warming the soil for a week or more, so that the steam is only used for an hour or two at each time of heating; the sides of the pit are also plastered to retain the steam.

(d) Is about six inches of rotted leaves or twigs, against which, the steam condenses and prevents the soil becoming too moist.

(e) The soil about ten inches deep.

JOSEPH HARRISON.

A short time since, Mr. Harrison wrote to us, saying, he was making some alterations which, he was satisfied, would answer perfectly; and as soon as they were completed, he would furnish the public with them through the *Register*.

J. P.

ARTICLE VIII.

ON REMOVING LARGE FRUIT TREES, TO PROMOTE THEIR FRUITFULNESS.

BY MR. J. STEWART,

Gardener to Sir Thos. Stanley, Bart. Hooton, Cheshire.

MANY are of opinion, that the productiveness of a fruit tree depends on the mode of pruning and training, as your worthy Nottinghamshire Correspondent does of his pendulent training; but I am convinced it signifies little, whether a pear tree, for instance, be trained horizontal, fan, pendulent, or any other fashion, provided the border is good, and due attention paid to the roots. I would advise those that have healthy, but bad bearing fruit trees, to act with them in the undermentioned manner: I was not only an eye-witness, but took an active part in the following operations, I can therefore vouch for the truth of the statement.

In the year 1825, I was employed as under-gardener, at Erskine House, Renfrewshire, and an extensive new kitchen-garden was made during the time I was there, in consequence of a new Mansion being built, which encroached too much on the old garden. To the greater part of the wall trees in this garden, great attention had been paid in training, &c. (and different modes had been practised;) they were healthy trees, but bore very scanty crops of fruit, they had

mostly all been planted above twenty years. The gardener, Mr. Shiells, thought it advisable to have the walls of the new garden entirely covered with trees from the old; and the spring previous to taking up the trees, caused trenches about a yard wide, in form of a half-circle, to be dug round the trees, the distance from the stem according to the size of the tree, some two, some three, and others as much as four feet, the trenches were dug deep enough to get below the roots, which were cut off close to the side of the trench nearest the wall, the trenches were then filled with light rich earth, care being taken to have them open no longer than was necessary; the trees did not put out many summer shoots that season, but bore quite as good crops of fruit as usual.

The wall borders in the new garden were made three feet deep, on a bottom of broken stones well rammed, they were composed of the top spit taken off a field (which had for many years pastured sheep) well mixed with rotten dung,

About the beginning of February, (the spring following after cutting the roots of the trees,) the borders in the new garden were in a sufficient state of forwardness to admit of the trees being planted: we were careful in unnailing the trees to tie the branches in bundles, and afterwards these bundles together as close as possible without breaking them. In taking them up, we commenced digging down a few feet farther from the stem of the tree, than the excavation was made the spring before, and deep enough to get under all the roots, then with sharp pointed sticks the mould was all removed from the roots, taking care to preserve all the young fibers which the roots had put out plentifully close to where they were cut. In several instances, when taking up the trees, we found larger perpendicular roots almost close to the stem, more especially in some of the old pear trees. I am of opinion, if these trees have not been transplanted, that the tap roots would have still, in a great measure, prevented the trees' fruitfulness; these roots we cut close off. The trees were taken up one at a time, and carried on men's shoulders to the new garden, although a distance of half a mile, there being less danger of breaking the branches, or shaking them, than by carting.

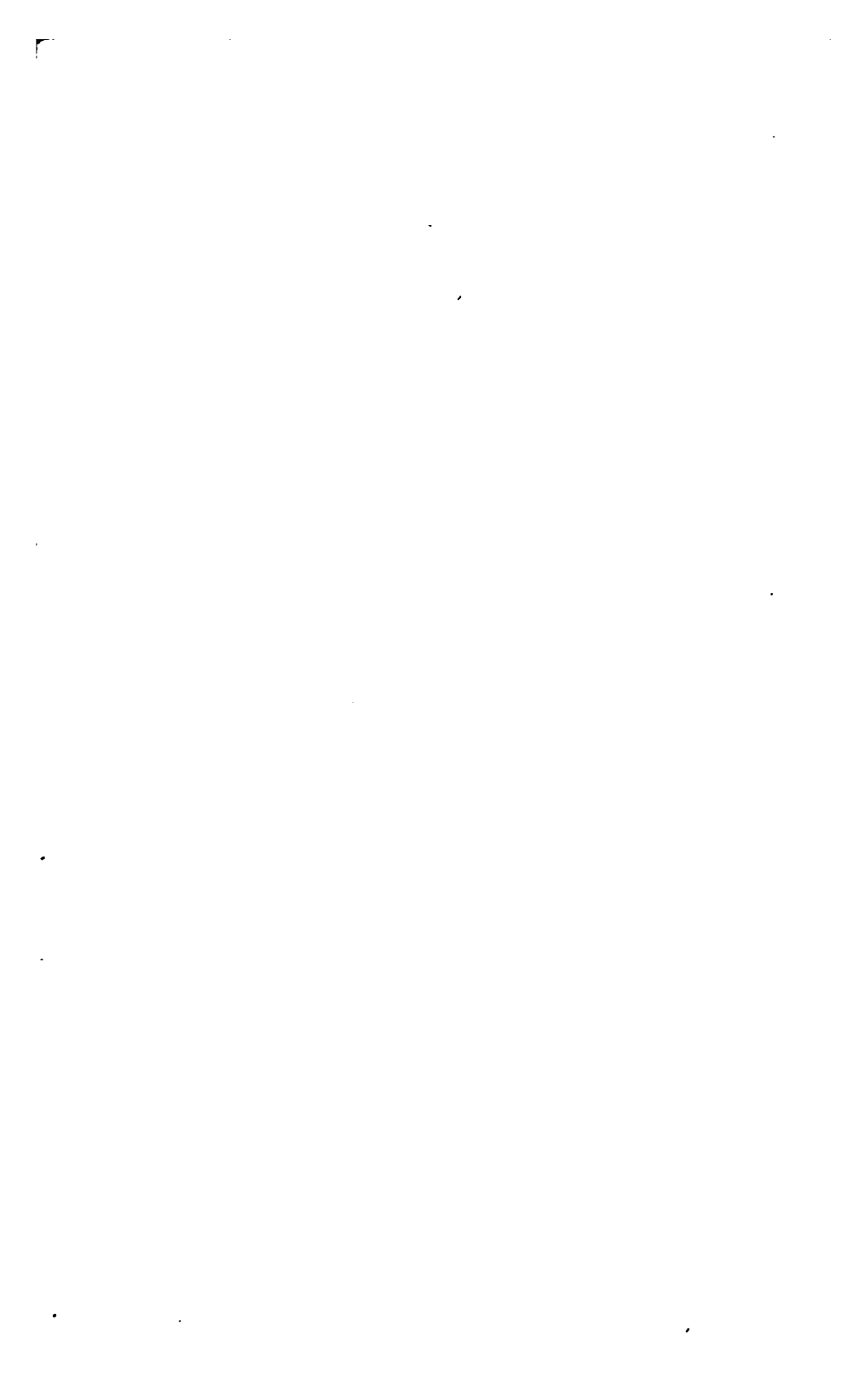
The principal point observed in planting was, to have the roots well spread out as near the surface as possible; after planting, the roots were mulched with fresh cow-dung: care was also taken to tack the branches only loosely to the wall, to allow of the tree subsiding with the border.

The whole of the trees received the same treatment, apples, pears, cherries, plums, peaches, nectarines, and apricots: what was very

remarkable, many of the pear-trees bore good crops of fruit the same year they were transplanted. I left Erskine in the winter following, and had not again an opportunity of seeing the trees until four years after: in 1831, I visited Scotland, and called at Erskine-House, and I must say, that I was quite struck with the progress the trees had made, not only in increase of size, but appearance and fruitfulness; there were some large pear trees trained horizontally, covering thirty feet by twelve of wall, that before transplanting, used only to produce a few blossom-buds at or near the extremities of the shoots, now thickly covered with blossom-buds from the stems of the trees to the extremities of the branches, (it being about the 1st of March when I saw them;) the cherries also looked remarkable well, they were thickly covered with short spine bearing fruit buds, making little or no breastwood, the peaches and nectarines had improved beyond conception. In planting them, in case of a failure with the old trees, young ones were planted alternately with them; but after letting these grow for two years, they were taken out, the old ones being found far superior; I can safely say, they were the finest trees I ever saw, and they were far from being good trees when they were transplanted. I think the above is sufficient to prove, that barren fruit trees may be brought into a good bearing state without a great deal of trouble or expense, an old border may be partially renewed. I have seen several gardeners cut wall trees down, and graft them with other sorts, not because they were bad sorts, but for being bad bearers, I have seen others cut the roots partially; but in my opinion, if a tree is unfruitful, although healthy, to depend upon bringing it to a state of productiveness, it must be taken up and replanted, observing to cut the roots a year previous to taking it up.

JOHN STEWART.

Hooton, March 20th, 1833.





NECTARINE PLUM.



LU'COMB'S NONESUCH PLUM.

ARTICLE IX.

DESCRIPTION OF THE NECTARINE AND LUCOMBE'S
NONSUCH PLUMS,

With some Account of the Natural History and Introduction of some of the Varieties.

THE Varieties of Plums are numerous, and Sir J. E. Smith enumerates several as natives of this country, amongst them is the *Prunus domestica*, or Common Wild Plum, which grows in most of our hedges, and is supposed to be the original of all our cultivated plums. According to Pliny, however, it is a native of Asia, and was brought from Syria into Greece, and thence to Italy. The different varieties now cultivated, have been introduced to Britain at various times, and some excellent ones have also been raised from seed in our own country.

The *Nectarine Plum*, or Howell's Large, and *Prune Pêche* of the Hort. Soc. Cat. Nos. 128 and 119, and the Caledonian of some collections. This fruit has been much confused with the *Goliah Plum*, which, in many situations it so nearly resembles, that when detached from the tree, they are scarcely distinguishable from each other. In the wood, however, there is a material difference, the shoots of the *Goliah* are downy, as are also the footstalks of the fruit, whilst those of the *Nectarine* are perfectly smooth. The wood of the *Nectarine* grows strong, the leaves and flowers large, and the fruit reaches the size of a well-grown apricot, the skin is purple on the side next the sun, and a light red on the shaded side, covered with a fine azure bloom, the flesh dull greenish yellow, and slightly adhering to the stone. It is a most excellent bearer, either as a standard, or against a wall, usually ripening in good situations about the end of July, or beginning of August, which is somewhat earlier than the *Goliah*; it is hardy, and well worthy of a place in every orchard and gardens being, without exception, the best plum of its size yet known.

Lucombe's Nonsuch Plum.—This valuable variety, has been lately raised from seed, by Messrs. Lucombe, Pince, and Co. of Exeter. It is undoubtedly the nearest approach, that has yet been made on the part of a seedling to the famous *Green Gage*, or *Reine Claude* of the French; and although it cannot be said to equal that variety, it is, nevertheless, entitled to a character of very high excellence. It bears well as a standard, and is remarkably handsome, being variegated with dull yellow and orange, larger than the *Green Gage* usually

grows, and may be considered a great acquisition to our varieties of plums; the stone adheres firmly to the flesh, which is juicy and of the same colour and consistence as the Green Gage, but the flavour is inferior.

The Damsons was introduced into Europe from Damascus, about one hundred and fourteen years before the Christian era; the Reine Claude, or Green Gage, was brought into France by Queen Claude, wife of Francis I. of that country; and in the reign of Henry VII. Lord Cromwell brought several sorts to our country from Italy, and among them the perdrigon, which, when dried, forms the prunes of our shops.

In general, plums are moistening, laxative, and emollient, except the Bullaces and Sloes, which are astringent. They are cooling, quench thirst, and create an appetite, and therefore agree best with hot constitutions. The common wild plum was used in Medicines by the ancients, and the bark of the tree was thought to be equal to the Peruvian bark for intermitting fevers. Damsons produce a very pleasant wine, and a kind of jelly called Damson Cheese. Dried Perdrigon plums are principally imported from Portugal, and the neighbourhood of Marseilles, in France, and sell in our shops under the name of Prunes; they are used a good deal in Medicine, and although when dried, they lose much of their laxative power, they nevertheless, contain a portion of acid, and are very useful in costive habits. The pulp of this fruit, forms the principal part of lenitive electuary. Plums may be preserved sound for a long time, by gathering them carefully in dry weather, and laying them one by one in glass vessels, or small wooden casks made air and water tight, then cover the vessels with wet bladder, and bury them in the ground deep enough to secure them from being injured by frost.

We shall shortly turn our attention to plums again, when we intend to treat on their management, the different modes of training them practised, the soils and situations most suitable for fruitfulness, and other circumstances connected with their successful culture.

FLORICULTURE.

ARTICLE X.—ON FORCING FLOWERS.

BY MR. F. F. ASHFORD,

Gardener to P. L. Brooke, Esq.

IF the following few remarks on forcing American plants and other flowers, so as to cause them to flower in the winter and early spring months, be deemed worthy of the pages of the *Horticultural Register*, and the attention of its numerous readers, they are entirely at your service.

In the course of the preceding summer, prepare a quantity of sandy peat or bog earth for some plants, and rich mould for others; let the different sorts of soils be thrown up in different heaps for the action of the atmosphere to pulverise them.

In the month of March, take up out of your shrubbery-ground or nursery, the various species of Azaleas, Kalmias, Ledums, Andronedas, &c. with good balls, and pot them in sandy peat or bog earth, and plunge them in a shady border, supplying them during summer with plentiful supplies of water.

At the same time, a sufficient quantity of roses, honey-suckles, pæonys, &c. might be potted in rich loam, and plunged with the rest, and duly watered; care must be taken to prune the roses well, not allowing more than two eyes to a shoot, that they may produce stronger shoots for forcing. These should be mulched with rotted dung to keep them moist.

In the month of September, pot off a sufficient number of seedling pinks or layers of the last year, and as the season is now declining, these must be plunged where they can receive the rays of the yet remaining summer's sun. They should be potted in rich mould with a little leaf-mould added, to make the soil rather light, that their tender fibres may run freely.

About the middle of October, take up the various sorts of Rhododendron with good balls, pot them in large pots with bog earth, and a little maiden-loam, and plunge them in a sunny border. The reason of taking up these so late is, that you might choose those which have the most blossom buds; for if taken up in spring, half may prove useless in respect to flowering.

Great care must be taken not to injure any of the main roots of any of the kinds in removing them; and in potting, the soil must be well got round the roots; for on these two points in connection with

attention to summer watering, much depends as to future success. At the latter end of November or beginning of December, they must be prepared for forcing; wash the pots, remove all gangrene that may have accumulated on the top of the soil, renewing them with fresh compost, and cutting away all dead and decayed shoots. The house should not be kept above 55 degrees Fahr. until the buds begin to push, or they will break weak, and their flowers will be inferior both in colour and size.

As the buds advance, the house may be raised to 60 and finally to 65 degrees, but no higher. They will now require no further treatment, than supplying them plentifully with water whenever they require it, and air when the weather is favourable. Sometimes the roses and some others are infested with the green fly, (*Aphis*) so as to totally destroy the buds intended for flowers; whenever they appear, apply a little snuff to the infected parts; if they should infest most of the plants in the forcing house, as is often the case, fumigation must be resorted to, till they are effectually eradicated from the place. As the various kinds come into flower, they should be removed to the conservatory or greenhouse, where they will remain in flower some time with due care, enlivening the scene with their gay and gaudy colours, and refreshing the air with their odiferous fragrance.

I here subjoin a list of those plants that I think most deserving of notice, for the information of the more inexperienced portion of your readers.

<i>Azalea pontica</i> ,	<i>Ledum latifolium</i>
— — — <i>albiflora</i> .	— — — <i>angustifolium</i> .
— — — <i>tricolor</i> ,	<i>Ammyrsine buxifolia</i> .
— — — <i>Calendulacea</i> .	<i>Rhodora canadense</i> .
— — — — — <i>splendens</i>	<i>Rhododendron maximum & album</i>
— — — — — <i>triumphans</i>	— — — — — <i>dauricum atrovirens</i>
— — — — — <i>ignescens</i>	— — — — — <i>catawbiense</i>
— — — — — <i>nudiflora</i>	— — — — — <i>ponticum</i> .
— — — — — <i>alba</i>	— — — — — <i>rosea</i> .
— — — — — <i>incarnata</i>	— — — — — <i>flo-plena</i> .
— — — — — with some others.	— — — — — <i>foliis argenteis</i>
<i>Kalmia latifolia</i>	— — — — — <i>foliis aureis</i> .
— — — — — <i>angustifolia</i>	<i>Caprifolium Periclymenum</i> .
— — — — — <i>rubra</i> .	— — — — — <i>serotinum</i>
— — — — — <i>rosea</i>	— — — — — <i>belgicum</i> .
— — — — — <i>glauca</i> .	— — — — — <i>sempervirens</i> .
	— — — — — <i>minus</i> .

Andromeda racemosa,	Pæonia tenuifolia.
—— axillaris and Catesbæ.	Rosa muscosa and varieties, with
—— speciosa.	other species and varieties.
Arbutus unedo.	Daphne Mezereum,
Syringa persica,	—— — rubra,
—— — alba,	—— — alba,
—— vulgaris purpurea.	—— cneorum,
Pæonia Moutan	—— neapolitana,
—— — papaveracea	—— collina.
—— albiflora	

F. F. ASHFORD.

ARTICLE XI.

ON THE CULTURE OF THE CYCLAMEN PERSICUM.

BY T. B. C.

I DO not remember ever to have met with, (but perhaps you may attribute this to a very limited research) any specific directions for the treatment of that beautiful plant, the *Cyclamen persicum*. I believe, certainly, no article on its culture, has appeared in any of the published numbers of the *Horticultural Register*.

Being myself an admirer of this plant, not only on account of its general elegance of growth, but from its producing its flowers at a very early season, which thrive and retain their luxuriance even in the atmosphere of a room; I have turned my attention to its general culture.

The plan of treatment pursued by me, I have much pleasure in communicating.

The *Cyclamen persicum*, begins to shew its flower early in the year, and may be said to be in beauty throughout the months of March and April; as soon as the flowers fade and droop, the pots containing the plants are placed on their sides, (as a precaution against their being watered) in a corner of the green-house. In August, the roots are taken out of the pots, and the earth adhering to them being first carefully shaken off, they are planted in an open, but sheltered border of the garden, where they are allowed to remain until the cold forebodes frost; they are then taken up, the fibres being carefully preserved, and are put into pots proportioned to the size of each root; the crown of the plant is well covered with earth, and the compost used, consists of *two* parts, leaf-mould, *one* ditto

sandy-peat, *one* ditto ashes of burnt vegetables, and a small portion of *thoroughly* rotted dung.—The plants thus potted, are then arranged in a cold frame, and plunged to the rim in coal ashes; in mild weather, the glass is taken off; but by night, protection from frost, and by day, from cold and rough wind is indispensable. On the flowers appearing, the plants are removed to the green-house, and are placed as near the windows as possible, to have the advantage both of sun and air; they are abundantly watered with soft water, of the same temperature as the atmosphere they are growing in, the leaves also are occasionally well sprinkled; but this operation is gone through in the morning, and the windows of the house are immediately opened, otherwise the leaves would damp off, and the root decay. The pots are well drained with pieces of brick.

In recommending this treatment in the culture of the Persian Cyclamen, I can speak with confidence, having among other good specimens, one plant on which a few days since, I numbered *eighty-seven* flowers.

The dividing the roots to increase the stock of plants is bad, the roots are a long time recovering the wound then given, and do not afterwards flower so strong. Young plants are obtained very easily from seed.

T. B. C

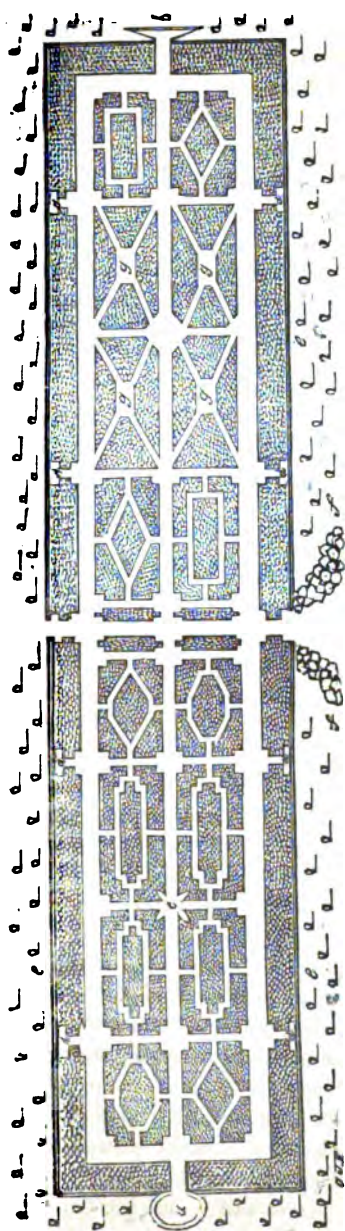
ARTICLE XII.—PLAN OF A FLOWER-GARDEN.

BY MR. SMITH.

Gardener at Snelston Hall, Derbyshire.

AMONG your numerous readers, some would, no doubt, be interested by your giving (in every third or fourth number) a Plan of a Flower or Pleasure-Garden, leaving the manner of planting and furnishing to the proprietor, or whom he employs. Thus, by way of seconding Mr. Brown's motion, Vol. 2, page 16, I herewith send you the sketch of a piece of ground I laid out in the shrubbery, at Snelston, (Fig. 27,) This would agree with any modern building, but there is something of antiquity about it which corresponds better with a gothic structure, and when well enriched with flowers and other curiosities, it renders the parterre exceedingly pleasant to the sight; the one here shewn has gravel walks, and box edgings, and would answer well if the beds were planted in masses, but is stocked chiefly with about six hundred species of herbaceous plants. By this mixture of planting, without further trouble, there is a successional show of

Fig. 27.



(a) Verandah. (b) Gothic Seat. (c) Water Vases, different patterns. (d) Gothic Chairs. (e) Gothic Trellis. (f) Rock Work. (g) Statues.

flowers the whole year, and in addition, the vacancies are sown in the spring, with some of the best annuals chiefly of a minor character; the taller ones being more applicable to the decoration of the shrubbery walks, &c. The herbaceous plants are chiefly hardy, yet they require some degree of shelter from north winds, (in exposed situations) and protection from the mischief of hares and rabbits; any light wire fence or trellising answers for protection, and likewise for the support of climbing plants; on the outer side of the guard, a second *fence* or screen would be useful and highly ornamental, if composed of evergreen shrubs, and planted alternately with *Rhododendron* *Cypress* *Magnolia*, &c.

I. SMITH.

ARBORICULTURE.

ARTICLE XIII.—ON PRUNING FOREST TREES.

BY CORONELA.

THE subject of planting and particularly upon elevated and inferior lands, is one that has of late years very much occupied the attention of the public, and has produced many very ingenious and useful publications; but I have never yet seen any full elucidation of the different advantages from the application of comparatively good and bad land to this purpose. It is very true, that *the clothing of mountains with foliage* is not only a laudable measure with reference to the general ornament as well as shelter of the country, but it is for the most part the *best purpose* to which they can be applied, and therefore to those who happen to be possessed of them, it is a wise proceeding to commence the process with all possible expedition.

It is found, that the increase in the circumference of trees is generally from about one to two inches annually, and the annual increase in height from twelve to eighteen inches, some falling a little short, and others exceeding this calculation. Whilst a tree is growing annually twelve inches in height, and one inch in circumference, it attains twenty-three solid feet in 60 years, another growing with an annual increase of eighteen inches in height, and two inches in circumference, will attain the same solid contents in thirty-three years. Suppose an acre of land which will produce in sixty years,

300 trees of twenty-three solid feet each, costs only five pounds, whilst an acre of land which will produce the same quantity of wood in 30 years, will cost six times as much, (that is, thirty pounds) then assuming the wood in each case to sell for one shilling per foot, the account at the end of sixty years, will stand thus, as to the five pound land :—300 trees of twenty-three solid feet each, will amount to 6900 feet, which sold at one shilling per foot, amounts to £345, deduct £5. at compound Interest in sixty years, (excluding fractions) £93, making £252. the clear produce of the £5. land in sixty years ! Then as to the £30. land, it appears that the same produce may be obtained twice in the same time ; the wood being totally cut down at the end of the first thirty years, and then planted again ; the first produce of £345. being then placed out at Compound Interest, it will amount in the second thirty years, that is, at the end of sixty years to £1459 to which is to be added, the second £345. making £1840, deduct £30. at Compound Interest for sixty years ; £560. the produce of the £30. land, will be £1280 ; produce of £5. land, £252, difference in favour of the £30. land £1028!! It is hoped, the above remarks may tend to rouse into action that indolence, which is the bane of country improvements. *Annual pruning* of trees, is the next essential to thinning, and the ruinous effect of a neglect of this operation, or the improper mode in which it has been executed, may be observed in all large plantations, as well as in hedge-row timber. On this account, it ought to be a favourite object, with the apparent inheritors of estates, to turn their attention to the planting, pruning, thinning, and other necessary improvements. The benefit of planting, must accrue either to the planter or his heirs, and where he has or is likely to have a numerous family, there is no means by which its younger branches can be so easily provided for. If it be profitable to plant new woods, it is certainly much more so to protect those that are already planted, and to restore them from a state of decay. A connective chain of arrangements is necessary, in order to render planting prosperous and effective. If any one link of this golden chain be taken away, the connexion and power of all must be interrupted. The most ingenious and enlightened men, who apply their powers and influence only to some parts of this system neglecting others, must ultimately fail of success.

CORONELA.

ARTICLE XIV.—ON PRUNING FOREST TREES.—BY MR. HOWDEN:

YOUR correspondent, "George," in volume 2, page 117, has given a lucid description of his system of pruning forest trees, &c. I hope he writes as I do, for the good of the public, and am sorry to see he and I differ so widely both in theory and practice. Mr. George likes to see a large Fir tree, with branches down to the ground, while I think one with forty feet of fine clear stem, with a ten or fifteen feet top preferable. Mr. George likes to see a mighty large lime tree, shading half a rood of land, while I, like the Duke of Athol, prefer forty trees containing 100 cubic feet of timber each, on the same space of land. All this may be only fancy, either of us may be wrong, he may find a customer for his lime tree, or Weeping Ash, as readily as I can find one for my solid timber, but *pro bona publico*, my taste is much superior to his. Fine clean timber is really a national benefit, as well as a profit to the possessor, foreshortened branches, or clipped spruces, may be all very well for ladies or gentlemen, who have time and cash to spare, but when such timber comes to market, or the saw pit, their value is as the top of my trees, compared to the butt ends. Mr. George says, very truly, that to cut off a branch or rival leader close to the stem, when three or four inches in diameter makes such a large wound, that it endangers the life of the tree; Pray Mr. George, how came you to allow a branch or rival leader, to attain a diameter of three or four inches? had you cut it off sixteen years ago, you would have done it with a sixteenth part of the trouble. Still a wound three or four inches in diameter is not such a deadly wound, but it may be healed, or that book of the Royal Gardener, Forsyth, is a grand hoax, but it is not a hoax, and I would advise George to read it. Granting that the young wood will never unite with the end of the stump, yet if the tree be allowed to stand for fifty or sixty years after the amputation, it will lay fine clean planks on the outside of it. I do not altogether condemn the foreshortening, I frequently practice it myself on a long straggling branch, but I condemn the idea, that a foreshortened bough will dwindle, shrink, or shrivel, and be thrown out of the stem like an old snake's skin; really, Sir, a foreshortened branch, as long as it lives, will continue to increase in circumference, either more or less, so that amputation delayed is always the more dangerous. We find in gardening that it is often prudent to rub off the buds, before they attain the form of twigs, the same would improve timber trees. Buds, twigs, and leaves, are not the causes of healthy growing trees, but the *effects* of a good soil and situation. The branches, twigs, and

leaves, take all from the tree, but send nothing back, else why should not a twenty feet vine rod strike more vigorously than a single eye or bud? Leaves are chiefly necessary for carrying off the pure distilled fluids like perspiration, leaving the grosser matter in the body of the tree, and it is wonderful how few branches and leaves are sufficient for this purpose. From 12 to 20 feet is sufficient space of land, for the largest trees in Europe, which contain above one hundred feet of timber, but their huge limbs cover as much land as five trees would grow on, and I would rather have five trees containing 100 feet each, than one tree containing 500 feet.

JOHN HOWDEN.

March 10th, 1833.

RURAL AFFAIRS.

ARTICLE XV.—ON COOKING POTATOES.

BY PATRICK.

OBSERVING in page 49, an article on the Culture of Potatoes, which as an esculent root claims our greatest attention, both in regard to its culture and preparation for the table, whether we regard it as the food of man or of beast, its excellent adaptation to almost every variety of palate, and of constitution, induces us to recognize it as one of the very first boons of providence. Your esteemed correspondent, Mr. Mearns, have given some good remarks on the culture and produce of this valuable root, but in a great measure, its utility very much depends upon the state in which it is brought to the table. The following method of boiling this culinary vegetable, if adopted, will amply repay for the extra attention required. In the first place, the potatoes must be sorted, so as to have the large and small boiled separately, they must be thoroughly washed, and afterwards lightly peeled, and then put into a pot, with less water than is sufficient to cover them, as the potatoes will themselves produce a considerable quantity of fluid before they begin to boil. I have used sea-water, but always conjectured it made them tough, however, I always put a little salt into the water, which makes them much freer. If the potatoes are large, I find it necessary, as soon as they begin to boil, to pour in some cold water, till by trial, the potatoes be found to be boiled quite to the heart, if this be not attended to, they will otherwise crack and burst to pieces, on the out side, whilst the inside will be in a crude state, and unpalatable. When thoroughly boiled, pour the water out of the pot, for if they remain long in the water after

being boiled, they will become quite insipid. After the water is poured off, let the pot with the potatoes in it be put again upon the fire, that they may be thoroughly cleared of moisture, let the cover be kept off, that the steam may evaporate, and in a few minutes they will be ready for the table.

Some recommend boiling them with the skin on, but this I object to, for the black and unwholesome liquor, with which potatoes are naturally impregnated, resides much in the skin, and it is much better to get rid of that portion of it before the boiling commences. Potatoes, if they are of a good quality, and boiled as recommended, will be mealy, and of a beautiful white colour, when brought to the table.

PATRICK.

ARTICLE XVI.—TO PRESERVE SMALL SEEDS FROM BIRDS.

BY A LOVER OF GARDENING.

MOST gardeners are more or less liable to the depredations of birds, particularly the house-sparrow,* and chaffinch. My kitchen-garden being very extensive, I have been induced to adopt the following method to check their ravages. Most of your readers may perhaps conceive it both expensive and troublesome, although it is much cheaper than netting. The operation may be performed without the instructions or the assistance of the mechanic; my labourers, when the weather will not permit them to work out of doors, prepare rods of wood about two inches broad, and one inch and a half thick, and from ten to twelve feet long, these I join together by rods of the same dimensions, at each end, four feet nine inches long, I then pass another rod of the above dimensions, lengthways of the frame exactly in the centre, to hold the work more firmly together; I then have the frame closely wired with copper wire, (being the best) so as not to admit the birds getting through. The frame is raised on the bed with six pieces of wood strong enough, six inches long, one piece joined to each corner of the frame, and one in the centre; from these pieces of wood, I pass wire all round the frame close enough to prevent the birds getting through, I think this will have a more sightly appearance, than clothing the beds up with mats, as some gardeners are in the habit of doing; the frame can be made of any dimensions, according to the mode you prefer in making your beds; it can remain on the seedlings until they are well established, and then removed at pleasure until wanted again.

A LOVER OF GARDENING.

* I have tried Mr. Stafford's experiment for extirpating sparrows, but without the desired effect.

NATURAL HISTORY.

ARTICLE XVII.—STUDY ON THE SCIENCE OF BOTANY.

BY MR. F. F. ASHFORD.

THE next part that comes under consideration is the most Natural Structure of the parts of fructification, in considering which, the principal objects to be attended to are,

- | | |
|----------------------------|------------------|
| 1 The number of each part, | 3 Its proportion |
| 2 Its figure | 4 Its situation |

1. *Number*.—The most natural structure of the parts in respect to number, is to have the Calyx divided into as many segments as the Corolla, the filaments equal in number to the segments of the corolla and calyx, a single anthera on each filament, the divisions of the pistillum, equal in number to the cells of the pericarpium, or the receptacles of the seeds.

2. *Figure*.—In respect to figure, to have the calyx less spreading than the corolla, the corolla widening gradually, the staminum and pistillum upright and tapering, the pericarpium big with seeds, swelling and extending after the rest of the parts are taken off.

3. *Proportion*.—The calyx less than the corolla, the pistillum of an equal length with the stamina in an upright flower, but longer in an inverted one, if the flower slope downwards the stamina and pistillum inclining towards the under side, but if it slope upwards placed close under the upper side.

4. *Situation*.—The perianthium surrounding the receptacle, the corolla placed on the receptacle, and alternate with the perianthium, the filaments placed within the corolla, but corresponding with the perianthium, the anthera seated on the tops of the filaments, the germen possessing the centre of the receptacle, the style standing on the top of the germen, and the stigma seated on the top of the style. Complete flowers are either simple or aggregate. Simple flowers differ from aggregate in this, they have not any part of the fructification common to many flowers, as in the case with aggregate. Flowers are called aggregate when many flosculi, florets, (partial flowers) are by the meditaion of some part of the fructification common to them all, so united that no one of them could be taken out without destroying the form of the whole of which it is a part. The common part of aggregate flowers are either the receptacle or the calyx.

Aggregate flowers are primarily divisible into seven kinds, viz.

- | | | |
|-------------|---------------|---------------|
| 1 Aggregate | 3 Umbellata | 5 Amentaceous |
| 2 Compound | 4 Cymose | 6 Glumose |
| | 7 Spadiceous. | |

All of which shall be explained in their turns.

1. *Aggregate*, properly so called, has a receptacle that is dilate (extended in breadth) the florets standing on peduncles, (footstalks) as in *Scabiosa*.

2. *Compound*, an aggregate flower comprehending many florets that are sessile or without peduncles on a common receptacle that is entire, and having also a common perianthium, but furnished with anthera that grow together in the form of a cylinder, their properties are,

a A common receptacle enlarged and undivided.

b A common perianthium surrounding all the florets.

c The flowers monopetalous and sessile.

d The anthera of each floret, five in number, and growing together in a cylinder.

e A monospermous germen under each of the florets.

Compound flowers are of three kinds, viz.

a *Ligulate*, when all the corollulæ (little corolla) of the florets are plane, flat, shaped like a ligula, or narrow tongue, or fillet, and expanded towards the outer side.

b *Tubulose*, when all the corollulæ of the florets are tubulose, and nearly equal.

c *Radiate*, having rays, when the corollulæ of the disk (middle part) are tubulose, and those of the circumference (margin) of another form.

3. *Umbellata*, consisting of many florets, placed on a receptacle, on fastigate peduncles, that are all produced from the same point. They are told by the following properties, viz.

a A common receptacle divided into peduncles, whether the umbel be plain, flat, convex, rounding, concave, or hollow.

b A germen under the corolla.

c Five distinct stamina that are deciduous.

d A bifid stigma.

e Two seeds joined at their summits.

A *Radiate umbel* is when the marginal petals are longer than those of the disk.

4. *Cymose*, consisting of many florets placed upon a receptacle, upon fastigate peduncles, the primary ones of which issue from the same centre as in an umbel, but the secondary, or partial ones lie dispersed without order.

5. *Amentaceous*, consisting of a filiform, thread shaped receptacle, along which are disposed amentaceous squamæ (scales) that form an amentum or catkin.

6. *Glumose*, consisting of a filiform receptacle, the base of which is furnished with a common glum or husk.

7. *Spadiceous*, when there is a receptacle common to many florets placed within aspatha or sheath, such a receptacle is called a spadix, and is either branched as in palms or simple. In this last case, the florets may be disposed either all round it as in colla, on the lower parts of it as in Arum, or on one side of it as in Zostera.

ARTICLE XVIII.

COLLECTIONS AND RECOLLECTIONS.

NOTES FROM THE REPORTS OF THE BATH SOCIETY,

FOR ENCOURAGEMENT OF

Agriculture, Arts, Manufactures, and Commerce.

1. **STEEPING BARLEY IN A DRY SEASON.**—The seed barley was soaked in the black water, taken from a reservoir which constantly receives the draining of the dung-heap and stables. The light floating corn was skimmed off the top, the rest stood twenty-four hours: when taken from the water, the seed grain was mixed with a sufficient quantity of sifted wood ashes, to make it spread regularly, and three fields were sown, beginning on the 16th, and finished on the 23rd of April, 1783. The produce sixty bushels per acre of good clean barley, without any small or green corn, or weeds at harvest. Several other fields were sown with the same seed dry, and without any preparation, but the crop was very poor, not more than twenty bushels per acre, and much mixed with green corn and weeds when harvested. Some of the seed was sown dry on one ridge of each of the former fields, but the produce was very poor in comparison with other parts of the field. See Letter signed James Chapple, Bodmin, March 12th, 1784, vol. 3, p. 304. A note recommends general trials to be made both in wet and dry seasons.

2. **TURNIP SEED.**—When two or three years old, is found to withstand the fly better than new seed, Vol. 3, p. 366. Vol. 4, p. 170,

states, that the old and new seed being sown in equal parts, a quart for an acre broad cast, the latter attracts the fly till the whole is strong enough to escape.

3. **TO DESTROY INSECTS ON FRUIT TREES.**—Two gallons of boiling water poured on two ounces of tobacco, and three or four handfuls of the tender shoots of elder. The trees sprinkled with a small hearth-brush for two or three weeks, will effectually destroy the insects. Elder-water frequently sprinkled on honey-suckles and roses, prevents the insects lodging upon them. The above decoction may be made of any strength, as it is perfectly innocent to the tree. See Vol. 3. p. 367.

4. **FUMIGATION OF ORCHARDS AND TURNIP-GROUNDS, TO DESTROY INSECTS.**—Long dung, wet straw, weeds, &c. on every side, in heaps, and likewise some in different parts of the inclosure, setting fire to some of the heaps on the east side, if an east wind blow, and some within the body of the orchard, but always on the side from whence the wind happens to blow, so that the smoke from the smothering of the heaps may blow through and fumigate for some weeks.—Vol. 4, see p. 203—210. In harrowing or brushing in Turnip Seed, add to the harrow or thorn bush, a bush of stinking elder, (*Sambacus*) the dragging which over the field will leave such a disagreeable smell, as will probably be sufficient without other fumigation.

5. **THE CRANBERRY.**—At Sir Joseph Banks's, at Spring Grove, near Hounslow, a cranberry-bed was constructed on the side of the pond, (in 1805) twenty feet long, by five and a half broad, a few stakes being driven into the bottom, parallel to the side, and lined with old boards. The bottom of this was filled up with stones and rubbish, and on these was laid a bed of black mould, three inches above, or seven inches below the usual surface of the water. On this the plants were placed; and in the autumn of 1807, they produced an abundant crop of fine fruit; about five dozen bottles were gathered. The plants were of the American sort, and ripen well, without being subject to the attack of vermin, or to injury from excesses of heat or cold, wetness or drought.

6. **METHOD OF CULTIVATING GERANIUMS.**—Take up the old roots in autumn, and instead of throwing them away after taking cuttings, shake off the earth from the roots, and taking away all the succulent branches, lay the roots by the heels in sand, in a common frame, to preserve them from frost. Plant them out in April, and they will bloom during the summer. A hedge has been successfully managed in this way.

PART II.

REVIEWS AND EXTRACTS.

REVIEW.

THE ENTOMOLOGICAL MAGAZINE. 8vo. 3s. 6d.

Occasional Plates. Continued Quarterly.

AMONGST the numerous scientific productions of the present day, none seem calculated to benefit society more, than periodical Magazines; their being open for the insertion of the daily discoveries, made by our eminent and practical men of science; and the same discoveries being subject to criticism, tend to clear up the truth sooner than it could have been any other way. A Magazine exclusively confined to the present branch of Natural History was wanted, and although we cannot dive deep in the technical phraseology of our learned men, we nevertheless think the present work will be eminently useful to those who can. We hail its appearance with pleasure, because we judge it will tend to convince many, that the study of insects is not an unimportant one. The present work is to contain illustrations of the habits and metamorphosis of insects, descriptive characters of new genera and species, records of the captures of rarities, reviews (with extracts of all new entomological works, and information of every kind connected with the science of entomology, not merely British, but throughout the world, that all entomologists may become acquainted with each other's proceedings. Three numbers now lie before us, with each of which we have been much pleased, and that encouragement it already receives from our scientific men, speaks more in its favour than we can possibly do. Its articles are not generally such as suit our purpose for the *Register*, yet there are some "Observations on Blight," which we cannot with justice leave untouched, because our extracting them will show something of the merits of the work, and will also be the means of giving a little wider circulation to information of so much importance.

"Blight, is a term generally misunderstood, especially among those whom it more particularly concerns. The knowing Horticulturist will tell you, 'there is blight in the air to-day, and in a few days or weeks, he will see the web of the *lachey*, or *yellow tail*, or the *ermine* on his white-thorn hedge-rows; or the caterpillars of the *death's-head hawk moth* on his potatoes; or those of *butterflies* on his cabbages; and then he will give you a toss of his head, and say, 'I knew there would be *blight* this year, I saw it coming in the air;' or perhaps he may

find a good many snails eating his wall-fruits; or may, perchance, tread on two or three stag-beetles, while performing their evening perambulation along his gravelled walks; and then, he 'knew it would be either a *blight* or a *meg*, but it's more of a *meg* this year.' Further than this, the Horticulturist has not progressed:—webs and soft insects are *blights*, snails and hard insects are *megs*. Warm south-east winds produce the first, and cold north-east winds the last.

Let us consider, separately, some of the insects which bear the name of *blight*. We will, in the first instance, examine the apple-tree which has many assailants: the principal are the weevil (*Anthonomus pomorum*), the woolly louse or American blight, and the moth. I will describe the first of these, and its mode of proceeding.

By carefully examining the bark of an apple-tree in winter, you will occasionally find a pretty little beetle in the cracks, which, directly on being touched, shams dead, and drops on the ground, where you will not, without great difficulty, discover it, on account of the great similarity of its colour; you must therefore hunt till you find another. This time, as soon as you see him, place one hand below him, then touch him lightly with a little bit of stick, and he will drop into your open hand, his own scheme for self-preservation will beat him. Now roll him into a quill, or pill-box, and take him home. Place him on a sheet of writing paper; you will see his shape—the head is furnished with a trunk, from which, on each side, springs a feeler, bent at right-angles forward, so that the trunk altogether looks to be three pronged, like a trident. The thorax and wing-cases are brown, beautifully mottled, and an oblique line on each, pointing towards the suture or meeting of the wing-cases, is much lighter coloured, and gives the little beetle an appearance of having a letter V obscurely chalked on its back. Its size altogether is rather less than a hempsced.

With the first sunshiny day, in March, these weevils leave their winter quarters, crawl up the trunk and along the twigs, perch themselves so as to receive the full benefit of the sun's rays, and plume themselves with their legs and feet all over, trident and all, just in the same manner that a cat washes her face with her paw: they then stretch out their legs, lift up their wing-cases, and unfold two large transparent wings, which though twice as long as the wing-cases, were neatly folded up and hidden under them, and then, launching themselves into the air, they go roving about the orchards and gardens, their little hearts in an ecstasy of freedom, and love, and happiness. It is not long before each finds a suitable mate; no relations raise objections; and the nuptials are consummated.

By the time the female is ready for the important task of depositing her eggs, the spring has considerably advanced, the apple-buds have burst, and the little bunches of blossom are readily to be distinguished. The weevil soon finds out these, and selecting a blossom every way to her mind, commences her operations. The beak or trunk before alluded to, is furnished at its extremity with short teeth, or mandibles; with these, she gnaws a very minute hole into the calyx of the future blossom, and continues gnawing until her trunk is plunged in up to her eyes; the trunk is then withdrawn, and the hole examined with careful scrutiny by the introduction of one of her feelers, or outer prongs of her trident. If it seem to require any alteration, the trunk goes to work again, and again the feelers; at last, being fully satisfied that the work is well accomplished, she turns about, and standing with the extremity of her abdomen over the hole, thrusts into it her long ovi positor, and deposits a single egg in the centre of the future

flower. Another examination with her feelers now takes place; and when she is thoroughly satisfied, all is right, away she flies to perform the same operation again and again, never tiring while she has an egg to lay.

The bud continues to grow like the other buds; the little perforation becomes invisible. By and bye, the egg bursts, and out comes a little white maggot which, directly it is hatched, begins to devour the young and tender stamens; next to these, the style is attacked, and eaten down to the fruit, the upper part of which is quickly consumed; the maggot is then full fed; it casts its skin, becomes a chrysalis, and lays perfectly still. As the perfect petals expand, the mutilated buds remain closed, and for a few days preserve their lovely pink colour, and then by degrees, fade to a dingy brown. On opening these brown blossoms, about the 10th or 15th of June, the chrysalis will be found to have changed to a perfect beetle, which, had it been left to itself, would, in a few days, have eaten its way through the weather-beaten case of dried petals, and left its prison-house, flying about to take its pleasure, until the chilly winds of autumn should drive it into its winter habitation under the bark.

The cloudy misty east wind, in which our farmers and gardeners see the *blight* is the very weather of all, least favourable to the propagation and increase of these weevils. The fine clear sunny days of March and April, are the most favourable to them. The tomtits, sparrows, bullfinches, and other birds, which, at this time of the year, more particularly frequent orchards and gardens, live during these months solely on these weevils, and similar little insects; and consequently, are the only check on their increase which we possess.

EXTRACTS.

FLORICULTURAL INTELLIGENCE.

NEW AND RARE PLANTS, Figured in the Periodicals.

CLASS I.—DICOTYLEDONOUS PLANTS, OR EXOGENES.

LABIATÆ.—The Mint Tribe.

SALVIA FULGENS.—Refulgent Sage. Native of Mexico. Introduced in 1829. Flowers crimson. Culture.—It is a nice plant for turning out into the borders in summer; but requires the shelter of the greenhouse in winter, will grow in any light soil, and may be propagated by cuttings.—*Bot. Cab. for March*.

LEGUMINOSÆ.—The Pea Tribe.

GOMPHOLOBIUM VENULOSUM.—Veiny Gompholobium. Native of New Holland, whence seeds were collected by Mr. Baxter. Flowers, very bright yellow. It differs from all that are yet known, its leaflets being distinctly marked with little elevated slightly anastomosing veins, after the manner of the *Mirbelias*. Culture.—Pot in peat and loam, and give them the shelter of the greenhouse. In winter, they should be kept in a cool airy place, where a perfect command of ventilation is possessed, and the temperature should not be allowed to rise much above 40 or 45. They are propagated by cuttings.—*Bot. Reg.*

ERYTHRINA VELUTINA.—Velvety Erythrina.—A tree growing about thirty feet high in Madeira, its native country. Flowers of a bright orange red, and very shewy. It is not yet introduced into this country. *Bot. Mag.*

ONAGRARIÆ.—The Evening Primrose Tribe.

CLARKIA ELEGANS.—Californian *Clarkia*. An annual with rose-coloured flowers. Native of California, where it was discovered by Mr. Douglas. Culture.—It will grow in any common light soil, in the open border. It is propagated by seed.—*Bot. Reg.*

SCROPHULARINÆ.—The Figwort Tribe.

CALCEOLARIA HERBERTIANA PARVIFLORA.—Small flowered Herbert's *Calceolaria*. Flowers yellow. A native of the neighbourhood of Valparaiso in Chile, where it was found by Mr. Cuming. Culture.—It requires the same kind of treatment as *Calceolaria Chilensis*, *integrifolia*, &c. that is to say, an open border in a dry situation in summer, and a well ventilated greenhouse in winter.

COMPOSITÆ.

STENACTIS SPECIOSA.—Shewy *Stenactis*. A hardy perennial. Native of California, whence it has been sent by Mr. Douglas to the Horticultural Society. Its flowers are purple and showy. Culture.—Although a perennial, this may be treated as an annual, for seedlings flower early enough the first year to ripen their seeds. They will grow in any common garden soil, scarcely require any care in cultivation, and propagate freely by parting the roots.—*Bot. Reg.*

THYMELÆÆ.—The Mezereum Tribe.

PIMELEA HISPIDA.—Long-stalked *Pimelea*. A beautiful little shrub, native of the South-West Coast of New Holland, where it was originally discovered by Dr. Brown. Flowers rose-coloured, growing in larger bunches than the *V. rosea*; the base of the calyx is covered with long stiffish hairs which give the flowers the appearance of delicate feathers. Culture.—There is no difficulty either in cultivating this species, or striking it from cuttings, provided attention be paid to keeping them during winter in a cool airy place, precisely the same as *gompholobium venulosum*.—*Bot. Reg.*

RANUNCULACÆÆ.—The Crow-foot Tribe.

HELLEBORUS NIGER VERNALIS.—Vernal Black Hellebore. Flowers pure white, afterwards changing to a pale rose or purple, much clearer, and about one-third larger than the other two varieties, that grow in our gardens. Culture. It will grow in common light soil in the open border.—*Sweet's Fl. Gard.*

FUMARIACÆÆ.—The Fumitory Tribe.

CORYDALIS LONGIFLORA.—Long-flowered *Corydalis*. Flowers pale rose colour. A native of the Altaic Mountains. Tubers were received from Berlin, in 1832, at the Botanic Garden, Edinburgh.—*Bot. Mag.* Culture.—It should be potted in peat and loam, and kept in the green-house.

CLASS II.—MONOCOTYLEDONOUS PLANTS, OR ENDOGENES.

ORCHIDÆÆ, or Orchis Tribe.

MAXILL'ARIA PUNCT'ATA.—Spotted flowered *Maxillaria*. Flowers yellowish white, spotted with red, possesses a very delicate and agreeable fragrance. Native of Brazil, whence it was introduced a few years ago. Culture.—It requires

the usual treatment of *Maxillaria*, with a constant stove heat, and will sometimes admit of separation for increase. It should be potted in vegetable earth with moss and pieces of broken pot intermixed.—*Bot. Cab.*

MAXILL'ARIA OCHROLEUCA.—Pale yellow *Maxillaria*. Flowers yellow. Plant a native of Brazil, whence it was lately introduced. Culture.—It is not difficult of culture, if planted in moss and vegetable earth, with fragments of pot intermixed, and kept in the stove. It is increased by separation.—*Bot. Cab. for March.*

EPIDENDRUM PYGMÆUM.—Dwarf *Epidendrum*. A small creeping species. Flowers small and solitary, greenish-white. Native of Brazil; introduced by Mr. Harrison. Culture.—It requires the stove, like others of the same genus, and should be potted in peat and rotten wood.

SCITAMINEÆ.—The Ginger Tribe.

HEDYCHIUM STENOPE'TALUM.—Short-petalled Garland Flower. Native of India, whence it was lately introduced by Dr. Wallich. Flowers white, with a bluish tint. Culture.—Like the other species, it requires the stove, and to be cultivated in perfection should have a large-sized pot, and rich loamy soil. It will increase by separating its knobby roots in the spring.—*Bot. Cab. for March.*

CELLULARES OR FLOWERLESS PLANTS.

Tribe I.—FILICOIDÆ, or Fern-like Plants.

Order.—FILICES.—The Fern Tribe.

BLECHNUM GRA'CILE.—Slender *Blechnum*. This pretty Fern is a native of Brazil; Messrs. Loddiges received it from M. Otto, of Berlin. Culture.—It should be kept in the stove, potted in sandy peat, and may be increased by dividing the roots.—*Bot. Cab. for March.*

CULTURE OF COMMELINA CŒLESTIS, AND ON PRESERVING THE BULBS OF THE TIGRIDIA PAVONIA AND CONCHIFLORA.—The *Commelina cœlestis* is well known to thrive, and display its succession of beautifully delicate azure flowers in the open borders, during the months of July and August; but on the approach of winter, a trifling frost is sure to destroy the roots. Plants raised from seeds early in the spring will, if planted by the end of April in tolerably rich soil, produce good roots by the autumn. After the stems are dead, and removed from the plants, the roots are taken up, and placed under the stage in the green-house, or upon the mould contained in large pots or boxes which include large plants; in short, in any part of the green-house in which they can be kept in a moist state: and, to secure them in this condition, sprinkled occasionally from the rose pan of a watering-pot, if they are not damp enough without it: their natural texture is so succulent, that they will, if kept dry, shrivel and become exhausted, and if suffered to remain in a half-dried state, they will become mouldy and rotten. In the beginning of March, they should be planted, if in a bed, at a foot apart, when they will be much finer and stronger than they were in the previous year. By continuing to grow and preserve them in this manner, they will improve each succeeding year, and increase by offsets as do the turban and other ranunculuses. The bulbs of *Tigridia Pavonia* and *conchiflora*, are best preserved in the same manner.—C. AUSTIN.—*Gard. May.*

NATURAL HISTORY.

THEORY OF RAIN.—The commonly received opinion is, that the water which evaporates from the surface of the earth is held in a state of chemical solution in the air, which ascends into higher regions, where the moisture is precipitated in the form of clouds, which are sustained there by the joint agency of heat and electricity, and the deposition of rain is the result of the electrical action of the clouds upon each other. The atmosphere, at the elevation of a few hundred yards, is at a tolerably uniform temperature with that near the surface of the ground, and therefore the condensation of the evaporated moisture must take place at a considerable height. In tropical countries this condensation in the form of clouds is not so frequently witnessed as in our colder climates, where the temperature of the air is continually subject to variation.

That evaporation does take place at all temperatures, when the air is tolerably dry, may be easily shown, by placing a cup on the surface of water, containing dried potash, or fused chloride of calcium; either of these substances will deliquesce with great rapidity, or if concentrated sulphuric acid be substituted, it will speedily absorb nearly half its bulk of water; the vapour which appears to rise from water and low ground after sunset, is merely the moisture precipitated from the air upon the earth, cooled by radiation.—*Field's Nat. Mag.*

ANSWERS to the objections respecting the Theory of Rain, extracted from the *Field Nat. Mag.* and inserted page 185.

Answer to objection First.—The reason of this seems to be, that the vapour rises imperceptibly, both above and below 60 degrees, and is condensed in the atmosphere when it is below that temperature. Thus the vapour is imperceptible in the neck of a Florence flask boiling over a lamp, though clearly seen above it, when the temperature is less. Again, when a draught of cold air dries a wet pavement, no steam is perceptible on the surface, though five or six feet above it may be felt as a sensible dampness on the clothes and linen.

Answer to objection Second.—In this case the temperature is raised both in the air, and on the surface of the earth. We know not what becomes of water when raised in the atmosphere, by a high or very low temperature, as in both cases it is imperceptible, though its particles are no doubt affected by heat or the absence of heat, the one expanding it into dispersed and incoherent particles, the other condensing it into the form of hail or snow. By the absence of caloric, which at any temperature above the freezing point, is sufficient to keep it in a state of fluidity.

Answer to objection Third.—This would undoubtedly be the case were water raised by the heat of 300 degrees in usual summer heat, but this is not the case in any part of our globe. Again, in all cases of evaporation we must make allowance for currents of air which disperse the vapours and separate its particles, counteracting its tendency to gravitate.

Answer to objection Fourth.—This proves the effect of condensation of the aqueous particles by cold, but does not disprove their rarefaction by heat, which would keep their particles divided, and thus prevent condensation.

Answer to objection Fifth.—Here the agency of increased temperature in the surrounding air renders the vapour invisible, as with our breath, which is only

visible when the temperature is below that of itself, when it comes from our bodies. The glass is raised on its surface to the temperature of the surrounding atmosphere, and therefore does not condense the steam, but were it taken out of a pail of ice, wiped dry, and immediately held over the river, would it not condense the vapour? Though water does not *boil* without heat, it would be too much to say it does not *evaporate*, or in other words, that no vapour rises from it when the air is above the freezing point. Upon the whole question, we must allow that evaporation is constantly going on from the vast bodies of water on the surface of the globe, though its condensation, on which its visibility depends, must always be regulated by the temperature of the atmosphere, as before explained.—E. G. Ballard.—*Field Nat. Mag.*

CIRCULATION OF THE FLUIDS OF PLANTS.—The ascending sap rises towards the foliaceous parts, charged essentially, setting aside the earthy matter, with carbonic acid, or with bodies capable of being converted into carbonic acid; it loses by exhalation a very considerable quantity of the water which it contained, and in consequence of the decomposition of the carbonic acid gas, it gives off a large quantity of oxygen, and is reduced to simple carbon. This sap then exists in a proportion, as to its elements very analogous to gum, that is to say, of water and carbon.

This gum, dissolved in the water of vegetation, must run by the intercellular passages, both in the bark and wood, when the causes which determine the rapid ascent of the sap during the day, cease to operate: this is what constitutes the descending sap. The sap which runs down along the bark, not meeting with the ascending current, passes without obstruction to the root.

The sap which runs down through the woody substances meets the ascending sap, which, during the day, at least, is carried up with force; these two mixing with the water, which is exuded from the wood by the rays and medullary sheath, serve to nourish and develop the cambium into a ligneous and cortical zone.

This gum dissolved in water in its descent by the bark, is able to assist on one side the secretions which are forming there, and on the other to supply nutriment to the cambium, or the partially organized juice, which contains the rudiment of the new zones. The gummy matter which also descends through the albuminum, serves likewise to nourish the cambium, or the new woody zone; this is the gum, which, as it descends by the bark, is stopped in its course by an annular section, whereby it is compelled to undergo the action of the cellules for its conversion into ligneous matter for the purpose of nourishing the bark, and developing in it a protuberance formed on the trunks of woody vegetables.

Throughout the whole of its course the gummy matter can be absorbed by the cellules, which are not filled, and which retain their vital action; thus all the cellules of the albuminum, and of the liber, like so many hygroscopic bladders absorb the gummy water which surrounds them; each of them elaborates it by its own peculiar action, and can thus according to its nature, transform the gummy matter into fecula, sugar, or lignine, with so much greater facility, as the whole four substances scarcely differ; and we often in our laboratories have a proof that they can be converted into one another. This is especially the case in the experiments on the conversion of lignine and starch into hydrated sugar by the action of sulphuric acid. The gum and the sugar appears to be, in this series of decompositions, the two transitory conditions, and their extreme solubility in water, exposes them constantly to be drawn away towards the most energetic organs.

The fecula and the lignine are of a more permanent nature ; the fecula settles itself as though it were stored in the organs which must ultimately be developed ; it retains the soluble matter, which is protected from the water by the insoluble covering that surrounds.

In short, the lignine is deposited in those particular organs which have reached the complete stage of their development, or in the tissues themselves of the vegetable membranes, nor does it appear to be of a nature fitted to be transferred again to the other parts.—*Prof. De Candolle.—Field Nat. Mag.*

CAUSE OF VOLCANOES....It is not long since it was thought that the decomposition, and subsequent ignition of pyrites, was sufficient to account for volcanoes, &c. though they are rarely if ever found in lava, or volcanic productions, and they are still more rarely found at all in masses of any extent. Besides, so long as they remain enveloped in rocks, they are unalterable ; and two or three species, even under the most favourable circumstances, are decomposable with great difficulty ; and only one species—radiated pyrites, is capable of being rapidly decomposed, but not unless it be broken or crumbled into small portions, and not too much, or too little moistened....*M. Cordier, Field Nat. Mag.*

ON THE TEMPERATURE OF SHALLOWS AT SEA.—The waters which cover shoals, owe the diminution of their temperature, in a great measure, to their mixture with the lower strata of waters, which rise towards the surface on the edge of the banks. The proximity of a sand-bank at sea is indicated by the rapid descent of the surface temperature of the water. *Capt. Williams. Field Nat. Mag.*

. GOLD-CRESTED WREN....The Golden-Crested Wren, and the common brown Wren, are both very impatient of cold. In confinement the least frost is immediately fatal to them. In a wild state they keep themselves warm by constant active motion in the day, and at night they secrete themselves in places where the frost cannot reach them ; but I apprehend that numbers do perish in severe winters. I once caught half a dozen wrens in the beginning of winter, and they lived extremely well upon egg and meat, being exceedingly tame. At roosting-time, there was always a whimsical conflict amongst them for the inside places, as being the warmest, which ended of course by the weakest going to the wall. The scene began with a low whistling call for them to roost, and the two birds on the extreme right and left flew on the backs of those in the centre, and squeezed themselves into the middle. A fresh couple from the flanks immediately renewed the attack upon the centre, and the conflict continued till light began to fail them. A severe frost in February killed all but one of them in one night, though in a furnished drawing room. The survivor was preserved in a little cage, by burying it every night under the sofa cushions, but having been on one sharp morning taken from under them, before the room was sufficiently warmed by fire, though perfectly well, when removed, it was dead in ten minutes. *Hon. W. Herbert's Notes on Birds. Field Nat. Mag.*

PART III.

MISCELLANEOUS INTELLIGENCE.

I.—QUERIES, ANSWERS, AND REMARKS.

VINES IN POTS WILL GROW IN A COMMON HOTBED FRAME.—I have little doubt, but this would be attended with good success, providing the plants were properly prepared. I have now (March 18th) nine pots with small plants, the whole of which I calculate could be placed in a common three light frame. The average number of bunches on each plant is forty, or 360 perfect good bunches on the whole!! By a judicious arrangement of their stems, &c. attention to the supply of water and air, and a regular heat by linings, they will, no doubt, bear good crops. With respect to the second part of the Query.—Whether the Black Hamburgh will answer for the purpose!—I have no doubt but it would, yet owing to the large dimensions of its leaves, and the length of the footstalks, I should not prefer it; there are others which produce as fine fruit, and do not require half the space to grow in, which the Black Hamburgh does.

Willersley, March 18th, 1833.

GEO. STAFFORD.

WHAT WILL DESTROY THE THRIP? An early Forcing-House, under the superintendency of a friend, is seriously infested with a destructive insect, provincially called "The Thrip;" which, in the early stages of its existence, is of a very light colour, and subsequently becomes brown, much resembling in appearance the flea of pigeon-houses, and bounds from plant to plant; the ordinary mode of fumigating will not destroy it: and I shall feel greatly obliged to any of your correspondents, who will give me the necessary information, how this troublesome insect may be effectually annihilated.

H. D.

WHAT VEGETABLES ARE SUITED FOR A NORTH BORDER, &c.? The readiness and kindness, with which your correspondent "A Novice," and "Sage" (to whom I offer my thanks) replied to my former inquiries, respecting the cultivation of the Verbena, encourages me to seek for information on another subject. My kitchen-garden is surrounded by a wall ten feet high, and consequently the borders on the northern side of the southern wall gets but little sun, and that only early in the morning, and late in the evening. I shall feel obliged by any of your correspondents telling me, what vegetables can *best* be cultivated on such a spot. Its situation, as being near my manure yard, gave me an idea of planting a portion of it with Sea-cale; but I should like to have the opinion of some one more acquainted with the habits of that plant than I am.

Would it be inconsistent with the plan of your *Register*, to give your readers some information respecting the London Horticultural Society, such as the mode of becoming a member, the yearly expense, and the advantages a person is likely to derive from becoming a member, I mean as to the facility of procuring new plants, seeds, &c. &c.: an extended knowledge of this subject, might, I think, be generally useful to the Horticulturalist.

Having tried every one of the receipts, &c. given in your *Register*, for the destruction of Woodlice, I am compelled to say, they are all useless. I regret this, for I am over-run with them; they destroyed more than half my melon and cucumber plants last year.

SUFFOLK.

NATURALISTS' CALENDAR.—As an admirer of the *Horticultural Register*, I beg leave to suggest to you, that it would be a great improvement to the "Naturalists' Calendar," if you could give several plates, monthly, of the principal British Insects, especially of the Coleoptera and Lepidoptera in addition to stating where and when they may be found, and I think they might be grouped together in the same manner as the British Plants and Shells. You would thus in time render the *Register* a real Magazine of Natural History, and make it invaluable to young naturalists and gardeners, who cannot afford to pay for works which would give the desired information.

J. D.

ANSWER.—We have for some time had several improvements in contemplation, including the one our correspondent names. If the sale continues to increase, as it has done latterly, we cannot say what our subscribers will render us capable of doing: 'tis very probable, this, as well as other important additions, will be regularly carried into effect.

CONDUCTOR.

REMEDY FOR PINES INJURED BY BOTTOM HEAT.—Having had the ill luck to burn a pit of very fine established pines, by too strong a bottom heat, I should feel much obliged by your advice. Will they, if kept in a brisk moist heat, root afresh and start? Or must they be thrown away?

A CONSTANT READER.

ANSWER.—We would not advise to throw them away, by any means. The best plan that can be adopted is to repot them without delay, shaking all the old burnt soil from the roots, then with a sharp knife take away all that are injured, and when potted subject the plants to a brisk, but not violent moist heat, and if they are not very much injured, they will soon start vigorously.—COR.

CHANGING THE COLOUR of the Flowers of the Hydrangea hortensis.—Last spring, being desirous of having the flowers of the *Hydrangea hortensis* of a blue colour, I took great pains in forming the compost of two pots, in which I planted the *Hydrangea*, in strict conformity to the directions contained in the communication of your intelligent correspondent "Rusticus," at pages 11 and 12 of the *Horticultural Register*; these plants flowered luxuriantly in due season, but of the original or natural colour.

M.

TALC.—Your subscriber, page 427, can procure Talc at Messrs. Matthews and Son, 9, Crooked-Lane, London; whether it will answer the purpose, I cannot say.

CHANGING THE COLOUR OF HYDRANGEAS.—You will oblige many persons, and improve the beauty of our gardens, if you would give directions how to procure blue Hydrangeas; many are the prescriptions given, but they all seem calculated to mislead rather than instruct.

ANSWER.—We are trying some experiments, which, we think, will be conclusive and satisfactory, and we hope will set the matter at rest.

CONDUCTOR.

MODE OF ERECTING A VINERY, PINERY, &c.—I wish to make a small Vinery, Pinery, Melon bed, and a small bed for raising tender seeds and plants, for planting out; I want them all in one line joining each other, and the whole length of all not to exceed 30 to 36 feet. The vinery may be in the centre, the pine and melon beds at one end, the hotbed, for ordinary purposes, at the other. There is to be no fire, the heat must proceed entirely from manure, to assist the heat of the bark for the pinery; and disposed in the best manner for the grapes and melons. Now I want to know the best way of managing this; what should be the mode of constructing such a building! the whole, grapery and all to be kept as low as possible. In page 10 of the present volume, a mode of constructing a pinery without the use of fire is described. I have read it over attentively,

but I cannot discover how the bark bed is supported, and the bark kept from falling into the air-chamber, for I presume this last is an open space. I cannot either well understand the pigeon-hole construction of the bricks. I should very much like to know it for my own information, and that of my friends here. I employ a good many poor persons on my grounds, and in my gardens, and no person enjoys horticulture and arboriculture more than I do. I. M. T.

ANSWER.—We should recommend our correspondent to allow another four feet, and make the whole length of the range forty feet, this will allow four lights of vinery, four of pinery, three for the melon pit, and one for propagation. The pigeon-hole system will answer the best, and if I. M. T. will have the goodness to delay a short time we will illustrate the system further. We would advise to have a flue, heated by one fire to go round the whole range, for although this might not be much wanted, yet at the time of the fruit ripening, it would be found very valuable if the weather should prove wet. To give an uniformity we would have the melon pit at one end, and the propagating pit at the other end of the range; the pinery and vinery standing in the centre should be made somewhat wider than the pits, to allow for a two feet walk inside. In the pinery a small pit should be built for the succession pines, and a vine might be trained along the back, for early grapes, and vines in pots might also be introduced on the edges of the pit, and along the flue. In the vinery a constant succession of vines in pots might be brought in, and those for the rafters might either be planted inside the house, or in a border on the outside, which perhaps would be found to answer best, they might be conveyed across the dung pit into the house, by means of square boxes, in which the stems might be inclosed, or by taking off the upper part exposed at pleasure, these, together with those in pots, introduced both in this house and the pinery, would keep up nearly a constant supply of grapes throughout the whole year. In our next we will illustrate our meaning more fully by an engraving; we would have done so in this but had not the opportunity of getting the engraving executed in time for insertion.—CON.

ROSES TO TRAIN AGAINST A WALL.—Can you tell me which are the best sorts of hardy roses to train against a wall?

ANSWER.—The following may probably be accounted the best:—

BLUSH.	RED.
Rosa ruga,	Rosa hyacinthina.
— Boursoutti,	— Longii,
— Rusceliana,	— Grevillii.
YELLOW.	WHITE.
— Banksia multiplex.	— Roxburghi,
	— nivea,
	— multiflora platyphylla,
	— noisette, varieties.

The R. Boursoutti, Roxburghi, hyacinthina, and Grevillii, require a good warm situation, or they will not flower to perfection. CONDUCTOR.

II. NATURALISTS' CALENDAR,

OR OBSERVATIONS ON NATURE FOR MAY.

This is a beautiful month for flowers, amongst which we have selected the *Sinapis nigra* (fig. 28, 1) it is common in corn fields where the mould is pretty rich, the flowers are yellow. By every road side, where the soil is not very strong or clayey, may be found the Wild Chamomile (*Matricaria Chamomilla*) (2) it has white flowers resembling the medicinal Chamomile (*Anthemis*) but may easily be distinguished from it. Those of our readers who live near sandy heaths, may collect towards the end, the purple Milk Vetch (*Astragalus hypoglottis*) (3) from one or more of the species of this genus the gum Tragacanth is extracted; *A. verus* is generally supposed to be the chief plant, it is a native of Persia; the gum exudes in summer more or less copiously, according to the heat of the weather, in tortuous filaments which are allowed to dry on the plant before being collected. A large portion of Tragacanth, collected in Persia, is sent to India,

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Bagdad, Bassorah, and Russia, but what we receive is sent to Aleppo, from whence it is exported, packed in cases. In damp low woods, the Wood Cow Wheat (*Melampyrum sylvaticum*) (4) may be gathered in flower about the end, the flowers are yellow.

MOLLUSCOUS ANIMALS....In stagnant waters may be collected, a horn coloured shell, about half an inch diameter, rather transparent, often covered with a brownish coat, it is the *Planorbis cornueus* (6) the shell is of a rusty brown colour

above, and whitish underneath, and about an inch in diameter. In stagnant ponds, and low marshy ground the *Limneus palustris*, (7) is often numerous, the shell is about three quarters of an inch long, of a brown horn colour, rather opaque, it may be found feeding on the plants growing in those situations betwixt five and six o'clock in the morning during this month, often in company with the *Segmentina nitida* (8) from which it may be distinguished by its size, this last being scarcely $\frac{1}{4}$ of an inch in diameter, highly polished and smooth, of a chestnut or reddish brown colour, flattish or semi-transparent.

INSECTS.—All the carnivorous water-beetles (Natural Order, *Dytiscites*, including the well known genera, *Dytiscus*, *Colymbetes*, *Acilius*, *Hydroporus*) in swimming, move both hind legs simultaneously, striking out with great vigour in the same way as a frog; whereas the herbivorous water-beetles (*Hydrophilites*; genera *Hydrous*, *Hydrophilus*, *Helephorus*, &c.) in swimming, move their hind legs alternately, thus making weaker strokes, and progressing in the water much slower. The *Dytiscites* also porrect their antennæ in swimming, and conceal their palpi; the *Hydrophilites*, on the contrary, porrect their palpi, and conceal their antennæ. *Ent. Mag.*

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DRAGON FLIES and numerous other insects, make their appearance this month, as the Cow-lady, (*Coccinella*) Flesh fly, (*Musca vomitoria*) Four Spotted Dragon Fly, (*Libellula quadrimaculata*), The Great Dragon Fly, (*Æshna grandis*, Fig. 29,) and many species of Butterflies and Moths.

MODE OF CAPTURING MOTHS.—Lay a sugar hogshead which has been just emptied, and to which of course a small quantity of sugar will adhere, in an open space, near a garden or field. In the course of a night or two, it will be visited by numbers of Noctue, amongst which will not unfrequently be found some of the rarer species. The Noctue continue to visit it, particularly on moist evenings, as long as it retains any saccharine matter.—*Ent. Mag.*

SAP OF THE ROSE-TREE.—From a plant of *Rosa rubiflora*, at Hammersmith, with a stem three feet and a half high, and two inches and a quarter diameter, when deprived of its branches, and the head sawed off, 29th of July, thirty-one ounces of sap flowed in about a week, which, together with loss by evaporation, probably exceeded three pints. Chemical analysis gave the following ingredients:—

Oxalate of Lime.....	2,9 grains.
Acetate of Lime.....	1,097 do.
Acetate of Potash.....	0,7 do.
Gum and extractive.....	2,1 do.
Sugar? soluble in alcohol,..	0,1 do.
Loss.....	0,353 do.

7,25

Notes of a Naturalist.

BIRDS.—When the corn-crake (*Ortygometra crex*), is alarmed, it has the instinct, in common, with some other animals, and especially insects to feign death. A gentleman had one brought him by his dog, it was dead to all appearance. As it lay on the ground, he turned it over with his foot; he was convinced it was dead. Standing by, however, some time in silence, he suddenly saw it open one eye. He then took it up, its head fell, its legs hung down, it appeared again totally dead. He then put it into his pocket, and before very long, he felt it all alive and struggling to escape; he took it out, it was lifeless as before. He then laid it on the ground, and returned to some distance; in about five minutes it warily raised its head, looked round, and decamped at full speed.—*Field Nat. Mag.*

SINGULAR LAYING OF THE BARN OWL.—A nest of this bird last summer, in the neighbourhood of Tooting, contained two eggs, and when these were hatched, two more were laid, which latter were probably hatched by the warmth of the young birds; a third laying took place after the latter were hatched, and the nest at last contained six young owls of three different ages, which were all reared.—*Field Nat. Mag.*

ARRIVAL OF OUR SUMMER BIRDS. Notwithstanding the excessive wetness and coldness of April, Swallows made their appearance in the high peak of Derbyshire, in the first week, and the Redstart about the 10th; these are all we have yet seen here: the voice of the black cap has never struck our ears yet; but if the weather is fine, we expect to commence May with most of our summer visitors, excepting the Nightingale, which never comes so far north as we live.

III.—SOCIETIES,

CONNECTED WITH HORTICULTURE AND NATURAL HISTORY.

LONDON HORTICULTURAL SOCIETY.

THE principal articles which have appeared at the Meetings have been *Dendrobium speciosum*, *Acacia dealbata* in great perfection from the open air, *Azalea indica phœnicea*, *Cyrtopodium Andersonii*, five feet in height, a fine plant of *Phaius Tankervilleæ*, *Berberis glumacea*, *B. fascicularis*, *B. aquifolium*, and *B. heterophylla*, Seedling *Rhododendrons*, and collections of *Camellias*, *Epacris*, and *Narcissus*. Very good specimens of Cucumbers, Lemons, and Oldaker's Seedling Pine Apple have also been exhibited, together with an improved garden engine and hoes of a peculiar construction from Col. Le Conteur, of Jersey and Lord Vernon. Col. L's is more especially adapted for working between drills, that of Lord V. has been noticed by us before, and is a very efficient instrument. Papers have been read on the culture of the potatoe, on the preservation of green peas for winter use, and an Abstract of the Meteorological Journal for 1832, kept at the garden of the Society. The experiments instituted by Mr. Knight with the potatoe plant are still going on, and with every chance of a result most beneficial to the interests of the cultivator. The first of the proposed exhibitions at the garden, is fixed to take place on the 25th of May, and promises to be very attractive, if the season should be sufficiently advanced; the exhibition of articles is open to all who may desire to contribute.

Dr. Lindley commenced his course of Lectures, on the 24th of April; the subject of it was Mildew.

IV.—MONTHLY HORTICULTURAL CALENDAR.

FOR MAY.

April has been remarkable for the quantity of wet weather, which has deterred operators from getting in the crops till late. Wall-trees will still require protection. Sowing and planting for successional crops are necessary to a considerable extent. Insects must be narrowly looked after and destroyed. Grapes in the stoves, or vineries, will want thinning out, and the young wood of the Vines tying in, and stopping. Ridges for Cucumbers should be made. Annuals of several sorts should be transplanted; and cuttings of many green-house plants put in. Look well to the Cucumber and Melon frames; and give green-house plants air, night and day when the weather is fine, which will much prolong the flowering season.

FRUIT DEPARTMENT.

Apricot Trees will now require examining, and the Caterpillars secreted in the buds, destroying. See Calendar for April.

Peach Trees in houses, started in December, will now be swelling up. Keep the heat from 70 to 75 by day, and 65 to 70 by night.

Cherry Houses.—The fruit on those started in January, will now be stoning. Be very careful, that the thermometer range no higher than 60 deg. by day, and 55 by night, until this critical period is over, when the heat may be raised to 70 by day, and 65 by night. Give abundance of air, and syringe the trees until the fruit begins to ripen, when it must be discontinued.

Vines in pots, now brought into the vineries, will ripen their fruit the end of July; and those introduced up the rafters, will ripen their fruit in October.

FLOWER DEPARTMENT.

Dahlia Seed should now be sown on a slight hot-bed, or in a warm situation.

Auriculas towards the end of the month, will require potting.—See Vol. I, page 56.

Polyanthuses will now require potting, &c. See Vol. I, page 448.

Ranunculus beds will now require a little shading, to prevent the leaves turning yellow.

Tigridia pavonia.—Seed sown the end of March, or beginning of April, will now have produced plants large enough for transplanting. Plant them out on a slight hot-bed in rows four inches apart, and two inches in the rows.

Hardy Annuals may still be sown, either when the seed sown before has failed, or when it has been altogether omitted. Page 110.

Tender Annuals sown last month, will now require transplanting into small pots in light soil. Page 110.

Biennials should now be sown, to produce flowers next year.

China Rose.—Cuttings may now be put in advantageously, which will form fine plants by the autumn.

French and English Roses.—When it is desired they should flower late, prune at this time, instead of winter.

Erica cuttings may now be put in.

VEGETABLE DEPARTMENT.

Peas and Beans.—Sow once a fortnight for successional crops; also rod and earth up such as require it.

Dwarf Kidney Beans, as the Canterbury, Cream-coloured, Dun-coloured, &c. may now be sown on a warm border, in drills, two feet and a half apart.

Onions.—Sow a few Silver Skinned, to draw young in summer, or for small bulbs to pickle.

Potatoes for winter use, should be planted early in the month, if not done before.

Carrots, for drawing young in summer, should be sown in the beginning; and towards the end, the main crop will require thinning to about six or eight inches apart; but when they are intended to be drawn in the summer, as they may be wanted for use, only thin them to about four or five inches.

Cauliflowers that have been sheltered under hand-glasses, will now have pretty far advanced. Let the glasses be entirely removed, and if the weather should be dry, give them a good supply of water or cow-wash. Also sow more seed towards the end of the month for Michaelmas and winter crops.

Brocoli.—Plant out the early raised plants two feet apart, for heading in autumn, and sow the Siberian to produce heads next May; about the middle, some Green Cape and Early Purple Cape, and Grange's Early White, to come from the end of August to Christmas: at the end, sow the Green Close-headed, to produce from November to February.

Savoy.—Plant out the earliest raised Savoy about two feet apart, to form heads for autumn.

Celery.—The first sowing will now be fit for planting in trenches.

Cabbage.—Plant out the spring-raised for autumn use; also draw earth about the stems of the early ones; and sow more seed of the Van-Ack, Battersea, &c.

Radish.—Sow some of the Short-Top, and Red and White Turnip Radish, about once a fortnight, for succession.

Lettuce.—Sow the different kinds two or three times in the month, and plant early raised ones in rows a foot apart. Tie up the leaves of the Cos to blanch, for use.

Mustard and Cress.—Sow once a week, out of doors, in a warm situation.

Turnips.—Sow a plentiful crop of the Stone Top, &c. towards the middle of the month. Those before sown, will require hoeing and thinning.

Beta.—The Red will require thinning to about ten or twelve inches from plant to plant, and the Green and White to about six inches apart.

Endive.—Sow a moderate quantity of the Green-Curled about the 20th.

Spinach.—Sow once a fortnight, for successional crops.

Vegetable Marrow, Gourds, &c. may be planted out about the end of the month, under hand-glasses, either on a slight hot-bed ridge, or on a warm border; and a few seeds may also be sown in the open ground.

Cucumbers in frames, must be duly attended to, with air, water, bottom heat, &c. It is also now high time to prepare some ridges of hot dung, for growing them on under hand glasses, if not done before. These should either be made on level ground, about four feet wide, and two feet and a half high, or in trenches the same width, and three feet deep. Lay about eight inches in thickness of light mould on the bed, and place the hand-glasses three feet apart, upon it; and when the soil is warm, place three plants under each glass, and cover them well down at night with mats. Sow some seed by the middle of the month, in the open ground, to produce a crop for pickling, &c.

Herbs may now be propagated by slips.

THE
HORTICULTURAL REGISTER.

JUNE 1ST, 1833.

PART I.
ORIGINAL COMMUNICATIONS.

HORTICULTURE.—ARTICLE I.

FURTHER OBSERVATIONS ON THE CULTURE OF MELONS.

BY THE AUTHOR OF THE DOMESTIC GARDENER'S MANUAL.

C. M. H. S.

YOUR remarks on the wrapper of the last number (22,) concerning applications for the melon seeds I sent to you in January, induce me to trouble you again with a few remarks upon melon culture. That I may not, however, deal in mere words, I shall endeavour to second, and anticipate your assurances of presenting seeds to applicants that have heretofore been unsuccessful, by enclosing you all that I can spare of such seeds as I now possess. I regret to say, that I have not one remaining of the *Striped Housainee*, but I retain a portion of the sweet *Ispahan*; and also, of a fine variety allied to the great *Germek* of Persia; and these, I enclose, with a cordial welcome, leaving them to be disposed of in whatever number or manner you may deem advisable, and I trust, that the seeds of each will prove good and true to their kind.

The few observations that I am called upon to make, in addition to those contained in my two former papers, will refer solely to the variety last mentioned, because its culture is more simple than is that of the *Housainee*; and in respect of quality, it is all but as

good. In fact, this melon is one of the handsomest of its tribe, and its flavour is duly delicious. The only fault or defect consists in the rind being somewhat thicker than that of the Housainee; but yet, as far at least as my experience may be an evidence,—the rind, when compared with that of the melons of Europe, is in the proportion of writing-paper to stoutish pasteboard.

As in this comparison, and indeed, in the discrimination of the fruit, I have not been benefited by personal reference to any high botanical authority, nor even by my own observation of the fruit of the Great Germek itself, I feel called upon to give my reasons for designating this fruit a Germek melon. I received the seed by a circuitous channel, from Longleat, the seat of the Marquiss of Bath. It came to me in 1831, without a name or any other description than that which pointed out its merits in respect to the exquisite quality and flavour of the fruit.

When I first ascertained the dimensions, and perfect external appearance of the melon, in the spring of 1832, I referred to Mr. Lindley's Catalogue, (*Guide to the Orchard, &c.* p. 236, No. 20.) and found therein, a description which corresponded closely with the fruit then before me; it was, however, the only one that afforded me any clue to the information I sought: the passage read thus:—"LARGE GERMEK.—*Hort. Trans.* Vol. 6, p. 558.—A very handsome ribbed fruit, generally weighing five or six pounds, shaped like a depressed sphere, usually six inches deep, and from seven to nine inches in diameter. At the apex is situated a *corona*, or circular scar, varying from an inch to two inches in diameter. *Skin* sea-green, closely netted. *Flesh* one and three quarters to two inches thick, clear green, becoming paler towards the inside, firm, juicy, very rich and high-flavoured."

My fruit answered in so many important particulars to the above description, that I could not reasonably doubt its Persian origin; but in some respects a difference was discernable. In the figure and structure it was the same; it was also crowned at the apex with a circular scar; the ground-colour was a sea or glaucous green, but that ground was varied by blotches of very dark olive-green, irregularly, but beautifully distributed over the surface. The netting too, though decisively marked, could not correctly be styled *close*, or predominant. The tint of the flesh was of a clear green, becoming paler towards the inside, yet it gradually resolved itself into a delicate pinkish buff or salmon-colour, which was most marked in the part immediately enclosing the seeds.

The weight of the fruit was under four pounds; but that, perhaps,

was owing to the confinement of the plant to the limited dimensions of the pot it grew in. Upon these considerations, I have been induced to designate this fine fruit a *Persian Melon* of the *Germek* family, but perhaps, it may have been hybridised with some native of Europe.

Every one who has had experience in the culture of melons, can produce this variety in a common frame; but I would recommend the use of a brick-flued pit with a hollow chamber, the heated air of which, might, as required, be admitted above, by pipes passing through the bed of earth. Such a pit I am now erecting, and I mean it to combine some of the modern improvements, (so as to include a steam-chamber,) divested of their expensive concomitants; and if I find by experience, that it effects the objects I have in view, I will furnish a plan of the erection, and a calculation of the outlay. In the spring of last year, 1832, I raised the plant that bore the fruit of which I now write, in a small pot netted with hay. In May, it was transferred to a large pot containing the chopped turf of a sandy-loam, and this pot was plunged nearly to its rim in a bed of leaves and littery dung. An external lining of dung from the cow-stall and farm-yard, assisted the bed inside, but *the bottom heat was very trifling* at any time. The plant advanced rapidly, and was occasionally watered either with liquid manure or rain-water; it was pruned very little, but was stopped at an early period, so as to cause it to produce three or four shoots. These were suffered to proceed. *Not one healthy leaf was cut off*; and I seize this opportunity to caution all growers of melons against, and to deprecate, the thoughtless practice of taking off the *healthy* and *unshaded* leaves, upon the supposition that they are incumbrances, and useless excrescences, injurious, in as much as they darken the fruit, and prevent its attaining due maturity. Every healthy leaf has a specific office to perform, and a fruit *never swells more perfectly*, than when it is protected from the direct solar ray by the genial shade of its own foliage.

Around the pot, flat tiles were laid over the bed, (which I ought before to have said was covered with a layer of dry sand;) and upon one of these tiles the fruit rested. Experience, however, has instructed me to recommend the substitution of a sort of cradle, made by fastening strips of list to a little wooden-frame with four short legs; for on this slightly elastic support, the fruit may repose, secure from damp or pressure, and be occasionally turned, without fear of injury. If the plants be grown *in pots*, the treatment must correspond with that described in my paper upon the *Housainee Melon*; but if they be planted in a bed of stout and rich melon earth

not a drop of water, perhaps, need be given, provided the soil be properly moistened and pressed; in the first instance, then covered with three inches of sand, and lastly with flat tiles. It will be advisable to cut the fruit of this variety before it becomes fully ripe, because it is extremely liable to crack very deeply across the corona, if a strong gleam of sun strike upon it at the moment when it becomes *quite ripe*. Every experienced grower knows how suddenly a melon turns: this variety, in particular, requires critical nicety of observation; for, like others of the Persian tribe, it scarcely affords any indication of maturity till it be completely ripe: it then gives out the specific odor of a fine melon, but not, perhaps, as I found to my great concern, till a crack, two inches in length, and entirely through the flesh, be formed. It exhibits little or no change of tint at any time, nor am I aware, that any saccharine juice exudes from the foot-stalk at or near its junction with the fruit.

My *first Melon* was ripe in five weeks, and three days from the period, when it began to swell to that when it was over-ripe, (May 26, to July 3,) Thirty-five days. If the season be sunny, and the temperature of the pit be kept at from 75 to 100 degs. during the day, and at about 70 degs. in the night, it may, I think, be stated as the period that will generally be required, to bring the fruit to a condition wherein it may be cut with a certainty of its becoming subsequently mellow in a few days. *Shading with canvass or bunting, ought to be observed during the mid-day hours of a powerful sun-light*; and air ought to be freely given through small openings in front and rear *under the glass*.

My second crop was advancing, in consequence of a *cutting* that had rooted in a *small pot under a glass*. This *cutting* when a foot high, was moved (July 4th) into the stove, to be treated as a *Persian Melon*.

So says my Journal of the day, the mode alluded to, is described in my former papers. (*Horticultural Register*, Vol. 2, No. 2, p. 99.) Six or seven fruits speedily formed upon this plant; I removed all but one, and *that* became ripe and of excellent quality, but afforded no guide to future experiments, as the plant was almost entirely under shadow, and the shoot had by some accident lost its leader.

Such of your readers, as have not witnessed the gratifying results of the culture of melons and cucumbers by cuttings, will be instructed, and I hope much gratified by the perusal of the annexed passage from the *Gardeners' Magazine*; and much as I may regret, that I so trespass on your valuable pages, I feel it a duty to proceed,

for the mode of practice laid down is excellent, the description of it very clear and well detailed, and the authority referred to, undeniable.

In page 570 of Vol. 5, Mr. Loudon notices among other interesting objects during one of his *garden calls*, the Culture of Melons from *cuttings*, at Petworth House, by Mr. C. Harrison, the very able author of the Treatise on Fruit-Trees. His words are "We have already described this practice (Vol. 2, p. 415)" "as adopted by Mr. Harrison, for the purpose of obtaining a *second* crop; but as he has here adopted it for almost the *whole of his main crops*, we shall give an outline of his practice, subject, if we err, to his corrections in a future number. In the beginning of the season, one hill of seedlings is planted of each of the sorts it is intended to cultivate during the summer, and from these seedling plants or their offspring, cuttings are taken for all the crops. A one-light frame is set apart expressly for striking cuttings, and in it a stock of rooted plants, but never of more than three or four days' growth, are kept all the summer. A bed or pit being ready to plant, rooted cuttings are chosen *on which fruit blossoms have already appeared*, and these are distributed over the beds at distances so as to allow one, or from that to two square yards of surface to each plants, according to the size of the leaves and the mode of growth. In five or six days after planting, if the cuttings have been taken at the right time, that is, newly rooted, and with fruit blossoms just beginning to expand, the fruit will be as large as hens' eggs; in three weeks the greater part will be full grown; in five weeks some of the plants will have furnished three or four ripe fruits, and will be ready to be pulled up and replaced by others; and thus, in an extensive pit, or set of frames, every two or three days during the summer, the process of taking up and replanting will take place." "It must be evident to every practical gardener." Mr. Loudon most justly observes, "that no such rapid and certain mode of having an abundant crop of fruit has hitherto been practised. For our parts, we were quite astonished to see so many fruit *with so small a proportion of leaves and vines*, and to find fruit in *every part of every sash* of above a hundred sashes. The plants are watered with the drainings of the melon ground, which are led to a well in which they are concentrated by evaporation and fermented. If the liquor is not sufficiently strong, there is a heap of recent sheep's dung ready to add to it. Mr. Harrison prefers, that it should ferment some time before using, which is in unison with the practice of the German and Dutch gardeners and farmers, who never use the contents of their urinariums till they

have fermented for five weeks. All Mr. Harrison's crops of cucumbers, after the first crop, are raised and perpetuated in a similar manner from cuttings, and as may easily be conceived, the advantages are proportionably great."

Such is Mr. Loudon's report of Mr. Harrison's practice, and I can testify the witness of the last remark concerning cucumbers. I therefore intend shortly, if agreeable to you, sir, to insert a paper on the details of an actual experiment during the last summer. It only now remains to close this article by a cursory enquiry into the physiological cause of the early and great fertility of cuttings. What I adduce must, to a certain extent, be hypothetical; and therefore, I am open to correction from any one who can prove me to be in error.

Without insisting upon the fact, that the buds of all plants, or the germs of their future shoots, are formed at the earliest stage, wherein each and every part is produced; there are many circumstances which lead me to conclude, that besides these growing buds, there is a multitude of others, which lie masked or dormant for an indefinite period. In *annual plants* there can exist, I imagine, but little rational doubt upon the subject. Now, as long as the principle of *growth* proceeds in uninterrupted progress, each leader advances in length, and its roots simultaneously ramify into the soil beneath: *such is the progress of the unspotted, unpruned melon*. Little fruit is produced, and that at a very advanced period of its life. When, however, a cutting is taken off from the end of a shoot, and the shoot itself is pruned back, a very different state is produced. With respect to the *cutting* in particular, when planted in a bed of warm genial earth, or in a pot plunged therein, the effects produced are very extraordinary. The *electrical agency of light* is, indeed, equally exerted upon its terminal point and the few remaining leaves, as it was while the cutting remained upon the shoot, but this influence now operates in the developement of new members; and if the cutting succeed, that is, if the vital principle in it be sufficient to sustain, and to second the force of the energy exerted by the great natural agents, *light and air*, (aided by the genial moisture of the soil about the lower extremity,) roots will be protruded partly from the matter of the returning elaborated sap, but chiefly from the process sent down by the previously *latent*, but now sprouting buds. Thus several systems of life that had remained quiescent, are stimulated, and called into action, and among these, many cannot fail to be fruitful. Even from the stems of the mother plant, the experience of all time has evinced, that fructiferous laterals are sent forth after the main shoots have been cut back; and hence the origin of those

perpetual stoppings and prunings which have so severely tried the patience of the gardener. In the cutting, the effects produced are immediate and striking; the shoots are found to be shorter, the joints closer and more compact, the leaves smaller, and the fruit much more numerous; but the duration of such secondary plants is short, nor can it, as far as my experience points out, be perpetuated by cuttings: of this, I mean to adduce proofs in my paper upon the cultivation of the cucumber.

The conclusion I draw from all that has been advanced, is the following. Cuttings and prunings promote fertility, but not the duration or strength of a plant; the principle of growth being paralysed, other and new parts are called into action, and thus precocious maturity is produced, which must be, and is followed by early debility and death. But this is of little or no consequence, where the plant is but of annual duration, and the direct object of the cultivator is, to obtain the greatest produce of fruit within the shortest period of time.

G. I. T.

April 8th. 1833.

ARTICLE II.

THE CULTURE OF THE GRAPE VINE,

AND THE EARLIEST PERIOD IT CAN BE BROUGHT TO PERFECTION.

BY MR. WM. MATTHEWS.

Gardener to Lady Palmer, Wanlip Hall, Leicestershire.

AT the time for pruning the vine, which is generally in the month of December or January, I take the cuttings of the strong wood, and separate the buds or eyes from them, which having done, I plant them singly in pots of size No. 1, and plunge them into a hotbed of tan or dung, in which situation I keep them, and encourage their growth as much as possible until the middle of May, repotting them as occasion may require. The forwardest of the plants will at this time want the assistance of a small stick, to which they must be loosely tied with a piece of bass matting, which has been previously soaked in water. This being done, I turn them out of the pots into the border in front of the house, taking care to keep the balls of earth entire about their roots. The advantage derived by this method, of planting them singly in small pots, must be obvious to

every one who has tried them both ways. The chief difficulty is separating their matted roots, where several are grown together in one pot, without injury, as it can seldom be done without breaking off part of the fibres; this causes great hinderance to the plants, and considerably retards their growth. Care will be required in introducing their shoots through the aperture of the wall into the house, which should be filled with moss, or hay-bands to prevent their being blown about by the wind. I train the vines thus introduced up the rafters in the usual way, keeping them to a single rod without topping, and take care to water well during the season to promote a quick growth, preserving the requisite degree of heat, in order that the wood may get well ripened. For the second years forcing I take the rod of the preceeding years growth and layer it into a peck pot placed upon the flue of the house, leaving a few eyes, or buds, behind the pot for making the ensuing year's wood, then selecting the strongest shoots I train up the rafters as before, and forming a small arch of the remaining rod, I again layer into another pot, and if I have a sufficient length of rod left, I layer a third time, and then point the remaining part upwards towards the centre of the house; by this management the layers are able to maintain their crop of fruit without injury to the roots, and you may have ripe fruit fit for the table in eighteen months from the time of their being planted; of course, care must be taken to select such sorts as are early, and well adapted for forcing. The following will be found suitable: the White Muscat, Sweet Water, and Muscadine. For later crops I would recommend the White Muscat of Alexandria, Syrian, White Nice, Black Damascus, Black Saint Peters, West Saint Peters, and the Lombardy. When the crop is over, the wood perfectly ripened, and the part layered cut off close to the new rod, I lay the branches near the ground, and shade them until I want to commence forcing. I find the shade bears some affinity to the gloom of winter, and by accumulating excitability, always gives vegetation increased energy. Plants which have been habituated to regular forcings, always shew a disposition to bud at the accustomed time, whilst considerable difficulty often attends those which have not been used to forward excitements. About the time of the fruit ripening, just when they are changing colour, they will require great care and attention to prevent their being taken off by the disease commonly called *shanking*, which is, I believe, generally attributable to the want of a proper ventilation, although it sometimes happens from debility, particularly from the weaker sorts of Frontignan. It mostly shews itself about midsummer, when the sun rises early, by exhaling the moisture of

the house a perspiration is excited, which falling upon the footstalks of the berries cause them to wither and become useless. This is the principal reason of their shanking, in confirmation of which I may add, that in the open air, where no ventilation is required, this disease never shews itself. To prevent its incursions, the house should have a proper degree of ventilation both night and day. I recommend a pipe full of small holes to be fixed just under the roof of the house, at the top of the back wall, with ventilators at each end, this will be found particularly useful for fixed roofs where the sashes do not slide, the pipe may be of wood, copper, tin, or any other light material, the fires should always be well attended to, in order to keep the proper degree of heat in the house, during the season of inflorescence, if the weather proves dry and hot, with brisk winds, the berries of many of the different sorts of grapes, particularly the Blue Frontignan, White Sweet Water, and Damascus, will be liable to fall off at the time of setting, and the remainder are generally small and without stones; this arises from the calyx adhering to, and drying upon the germen, and thereby preventing its impregnation. It is proper, therefore, at this period, to water the vines plentifully, to keep the house as close as the weather permits, and also to water the flues of the house often, especially late in the evening, after which the glasses should be immediately closed; by this plan the heat of the house will exhale the moisture, and raise an artificial dew, which falling upon the calyx causes it to expand, and thereby assists impregnation. Although the grapes set the best in a close moist air, the house should not be kept at too great a degree of heat, during the time of setting. In serene weather transparent drops of dew will often be observable in a morning on the points of the leaves of the vines, which is the most favourable indication that can be at the season of blossoming, for the berries generally set well, and their growth is extremely rapid when in this state. The vine is considered by many to considerably abate its vegetative powers, by too long a confinement in a dry atmosphere, this obstacle may be removed by having plants in pots under them; from the pots a moisture arises which rectifies and renders congenial to the vines, the air which in the same house was before prejudicial. When the vines are in a state of inactivity it is an excellent plan to water them all over with a fine rose watering pan, by which they will imbibe moisture, and accumulate the power which has been considered deficient, by giving them a vegetating power. But in turning them out into the open air, I would by all means avoid this plan, for in the year 1829, I sustained great injury by so doing, it was not from the severity of the weather

alone they received damage, but the sudden transition from heat to cold, which in February is often the case, as after sunshine very severe frosts happen with rain and sleet, which I believe to be the chief cause of injury to the cropping of the vine. If we compare the climate in which it is indigenous with our own, we find the weather very severe, but of shorter duration, and less subject to change than in this. It is the practice in the vineyards in Germany for the labourers to make fires of turf, weeds, &c. to protect the vines from the inclemency of the weather, and in France it is customary to lay them in the soil and cover them over.

The Syrian, which is a large white oval grape, with a thick skin and firm hard flesh, is supposed to be the same species which the twelve spies who were sent by Moses to view the land of Canaan cut down by the Brook Eschol. A bunch of these grapes, grown by Mr. Speechley, of Welbeck, was produced, of the enormous weight of nineteen pounds.

It may perhaps be started as an objection to my method, that layers may be raised in the same time as eyes, which I admit, but the reason why I give a preference to plants raised from the eye or bud is, that layers are apt to make a superabundance of roots, which weaken and cause them partially to break, and prove defective in the second year's crop, and on such deficiency, I contend that the only plan to be relied on, is the one I here submit.

W. MATTHEWS.

ARTICLE III.

CULTURE OF THE STRAWBERRY, RASPBERRY, GOOSEBERRY, CURRANT, VINE, &c.

BY HENRY BROOKE, ESQ.

STRAWBERRY.—The runners should be planted in a moderately stiff soil in August, and in showery weather, either in beds of three rows, having an alley on each side, and the plants fourteen inches apart each way; or in rows two feet six inches wide, and a foot apart in the row, to afford room for treading between the plants without pressing too closely upon their roots, and to preclude shelter for reptiles, and insects. Runners of the former year may also be planted in March and April, but they will bear little or no fruit that season.

After fruiting is over the spaces between the rows, two feet six inches wide, should be digged and manured with the moss, rushes, fern,

&c. which have been placed in blossoming time close the plants, to keep the earth moist, and fruit clean, and snails and slugs away; the ground may then be planted with any low growing vegetables, which must be removed on the tenth of March at latest, the spaces will then remain as foot paths till after fruiting time, when they must be dugged, manured, and planted as before.

In March all the leaves except the small ones of the growth of last autumn should be removed, and the earth between the rows loosened deeply with a spade, and immediately afterwards, rich manure ought to be dugged close under its surface; the rain will wash it down to the roots.

The green leaves should never be taken off in summer or autumn, nor the plants left bare as is the practice in many places, for then they throw out new ones, which exhaust them to no purpose, In blossoming and fruiting time, the leaves which are close to the fruit stems should be retained to raise the sap for their mutual benefit, but those that are at too great a distance for that purpose must be taken off, as they deprive the fruit of its nourishment, as well as sun and air; this principle applies to the grape as well as cucumber, and to all fruits and vegetables. Plenty of water ought to be poured daily over the blossoms, in the absence of rain, to prevent their being blighted, and to swell the fruit. It would also greatly increase the size of the fruit, as well as that of the grape, to moisten the roots frequently from March to the end of fruiting time, with liquid manure, such as blood from animals killed by butchers, pond water frequented by cattle and poultry, soap-suds and pot liquor, mixed or unmixed, or any other.

When the plants are three years old, they should be dugged up and thrown on the compost heap. It would be well to cut down to within an inch of the ground, a few of the fruit stems of some of the plants just before the opening of their blossoms, to increase the size of the berries of the remaining ones, that they may grow again and bear large fruit in September and October. All runners not wanted for fresh plantations ought to be constantly cut off with scissors, and particularly before and during fruiting time. It would be judicious to form a new plantation every year, and to destroy an old one, to ensure a supply of fruit every season. Keen's Seedling, Keen's Imperial, Bartlett's (Bath) Nonsuch, Portugal Cluster, Downton, Elton Seedling, and Old Pine, are plentiful bearers, extremely large, and of exquisite flavour.

Red Alpine.—A bed of this sort, or of any other of the frequent bearing kind should be made every fourth year in the spring from

the first runners of that year, and the old one destroyed after that bearing season in Novembes. The bed ought to be three feet six inches wide, having an alley on each side, the ground must be well digged and manured, the surface raked fine, and rendered as loose as possible. On the first of March the decayed leaves and superfluous runners must be removed, and the earth loosened with a pointed trowel; pulverized manure, such as bone dust, or any other, should then be scattered over the bed to be washed into the earth by the rain; liquid manure ought to be occasionally applied under the leaves from March to the end of fruiting time. During the bearing season of the large sort, when the fruit of the small kind is not wanted, the experiment might be made of cutting down the fruit stems of the Red Alpine to within half an inch of the ground, to increase the produce in autumn, at which time all fruit is desirable. All the male or sterile hautbois, ought to be wholly extirpated, because the productive hautbois have the male and female blossoms on the same plant. One row of the prolific hautbois might be planted between two rows of any of the large kind, and the seeds of the hautbois sown, that a new variety of large size, and of exquisite flavour might be formed. In like manner one row of the alpine might be planted between two rows of the large sort, and its seeds sown that the produce may combine the frequent bearing qualities of the alpine, with the large size and fine flavour of the other kind.

Raspberry.—As a succession of this fruit must always be desirable in the desserts, it may be prolonged considerably beyond the ultimate time, by cutting down some of the stems wholly to within four inches of the ground, instead of leaving the canes at four-fifths of their length. The double bearing varieties should have the stems of every alternate stool cut down every year; these will furnish an abundance of fruit so late as September, and in a fine warm autumn even to a later period. The large white double bearing is the best.—

Lindley on Fruits. The former year's canes might be cut down to the ground as soon as they have produced their crop, instead of allowing them to stand till the winter or spring; this removes an unnecessary incumbrance, and at a season, when sun and air, are of infinite importance to the young canes, and consequently to the succeeding crop of fruit. The cutting down of the young canes for a succession of fruit may take place from November to the end of February. The rows should be five feet apart, to allow of manure being wheeled between them, and rubbish taken away; the plants may be supported with tar-twine, secured around two stakes at the top, and two at the centre, and two at the bottom of each row. After

twelve years, the old stools will be exhausted, and consequently they ought to be extirpated and young ones substituted.

Raspberry and Strawberry plants, and Gooseberry and Currant bushes, should have solid manure applied to their roots once a year, and liquid manure occasionally from March to the end of fruiting-time; meanwhile the earth around them ought to be dugged to admit air and rain to the roots. The large red, and yellow antwerp, are the best raspberries.

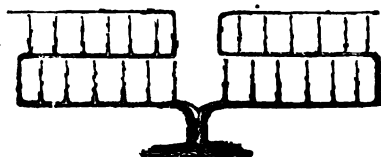
Gooseberry.—A gooseberry bush shall have a stem a foot and a half high and many branches; the branches ought never to be topped, as shortening causes them to throw out too much wood, but useless branches may be wholly cut out in winter, close to the parts whence they grew, and young ones encouraged to supply their places; at the same time, all side-shoots should be removed close, as there must not be any spurs. Insects may be partially, if not entirely, removed from shrubs by shaking the bushes well; and the smoke from burnt tobacco leaves, or powdered sulphur scattered over the bushes from a dredger, will effectually destroy the remainder.

Currant.—A currant bush ought to have a stem a foot and a half high; at the winter pruning, each of the main branches and side-shoots must be shortened down to one eye of the new wood; around which spurs and eyes, there will be many bunches of currants of amazing length, and the berries will be very large and sweet-flavoured. When cuttings of currant and gooseberry bushes are about to be planted to form new trees, the buds must be removed from those parts which are to be under ground, otherwise suckers will arise. The large red and the white Dutch currants are the best.

Vine.—The fruit is always produced like the raspberry from the shoots of the same year, which are thrown out of the buds of the last year's shoots. It is best to prune vines as soon as the fruit is gathered, because the bearing shoots cannot be mistaken; and it is recommended to shorten them so as to leave but four eyes, as by leaving too many the vine is exhausted, and yields but poor small fruit. The cutting is to be sloped in such a manner, that the water discharged from the shoot, may not run on the bud to injure it. The leaves just above, and on each side of the bunches of grapes, should never be taken off, as they raise the sap for their mutual benefit; but all others must be removed, as they deprive the fruit of their nutriment, as well as sun and air; the shoot must be pinched off at a joint or two above the fruit to stop the sap, as is done with the cucumber and currant. When the berries are as large as small peas, they ought to be thinned out with scissors, taking care to cut out the

interior ones, and leaving the outermost. To have very large fruit, the berries should not touch each other : at the commencement of frost, manure fresh from the stable, and without any straw, ought to be placed over the roots to remain there till April, when it must be dugged into the ground, and afterwards liquid manure should be fre-

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quently applied till the fruiting is over ; blood from animals killed by butchers, is the strongest and best for vines. The vine may be trained like Fig. 30, because the sap flows gently along the horizontal branches, and rapidly into the upright fruiting shoots.

Cauliflower.—The early German and Portsmouth Cauliflowers ought to be sown about the 20th of August for early summer produce, and the plants must be protected during frost within frames ; or by hoops and mats, or clean straw, which should be removed in mild weather : the seeds must be sown again in April and May for late autumn produce. When the head of a cauliflower or broccoli has been cut, the stump with its young leaves should be left in the ground, if short-legged, and earthed up to its crown ; but if otherwise, it must be lifted and immediately replanted up to its top, in fresh and well manured earth, that shoots may arise from the basis of the leaves, and from the rings around the stem near the surface of the ground, to head before or at the usual time of fruiting of the mother plant. Early cauliflowers, cabbage, and lettuce plants, and early peas, beans, &c. may have icicles removed from them in like manner, as has been stated for the potatoe. Cauliflowers, broccolis, cabbages, kidney-beans, &c. should be sown and planted in drills, like celery, having a bank at each side eight inches high, to supply three earthings up, and to retain moisture, and to afford shelter from high winds. The ground between the rows of cauliflowers, broccolis, cabbages, peas, &c. ought to be dugged occasionally and in dry weather, during the growth of the said plants, to refresh the roots, and to destroy insects, &c. for every moving of the earth causes insects to appear on its surface, to their utter destruction by birds and the gardener. As cauliflower and broccoli plants are apt to flower all at one time, it is advisable to draw up a few so as to loosen some of the roots, and in-

cline them a little to one side, to check their heading. When a cauliflower, broccoli, cabbage, lettuce, has commenced the process of heading, it would greatly expedite the said process, increase the size of its head, to tie its leaves rather loosely, and from time to time with a piece of bass mat or withy.

Broccoli.—Each of the following broccolis ought to be sown in March, April, and May, to come into use in succession from September to the middle of June. The Early Purple Cape, Early Dwarf White Russian, and Green's Close-headed winter, to head from September to the end of March. The late Sulphur-coloured Russian, Dwarf Danish, Branching, Miller's late Dwarf White, and the Portsmouth, from April to the middle of June.—When a head has been cut, the stump and young leaves must be lifted and replanted, as has been stated for the cauliflower.

H. BROOKE.

ARTICLE IV.

OBSERVATIONS ON THE CULTURE OF CHERRIES,

With some Account of their Natural History and Introduction into this Country.

BY JOSEPH PAXTON, F. L. S. H. S.

It is thought the Cherry was procured and brought into Europe by Lucullus, a Roman General, who drove Mithridates, king of Pontus, from his dominions. The tree was found growing in Cerasus (Keresoun) a city of Pontus, which his army destroyed. This circumstance is supposed to be the origin of the name of the fruit, Cerasus. Both Mithridates and Lucullus appear to have been botanists, and although the former vanquished twenty-four nations, and learned to speak their different languages, with ease and fluency, he yet found time to write a treatise on botany in the Greek language. Lucullus is said to have planted the cherry in Italy 68 years before the christian era; at the end of twenty-six years from that time their culture had become general on the continent, and they had even extended as far as Britain; this makes its introduction 42 years before the christian era, although it is believed by many to have only been planted here in the time of New's reign, which was A. D. 55. And about A. D. 70, Pliny wrote his work on Natural History, and mentions eight different kinds as being cultivated in Italy.

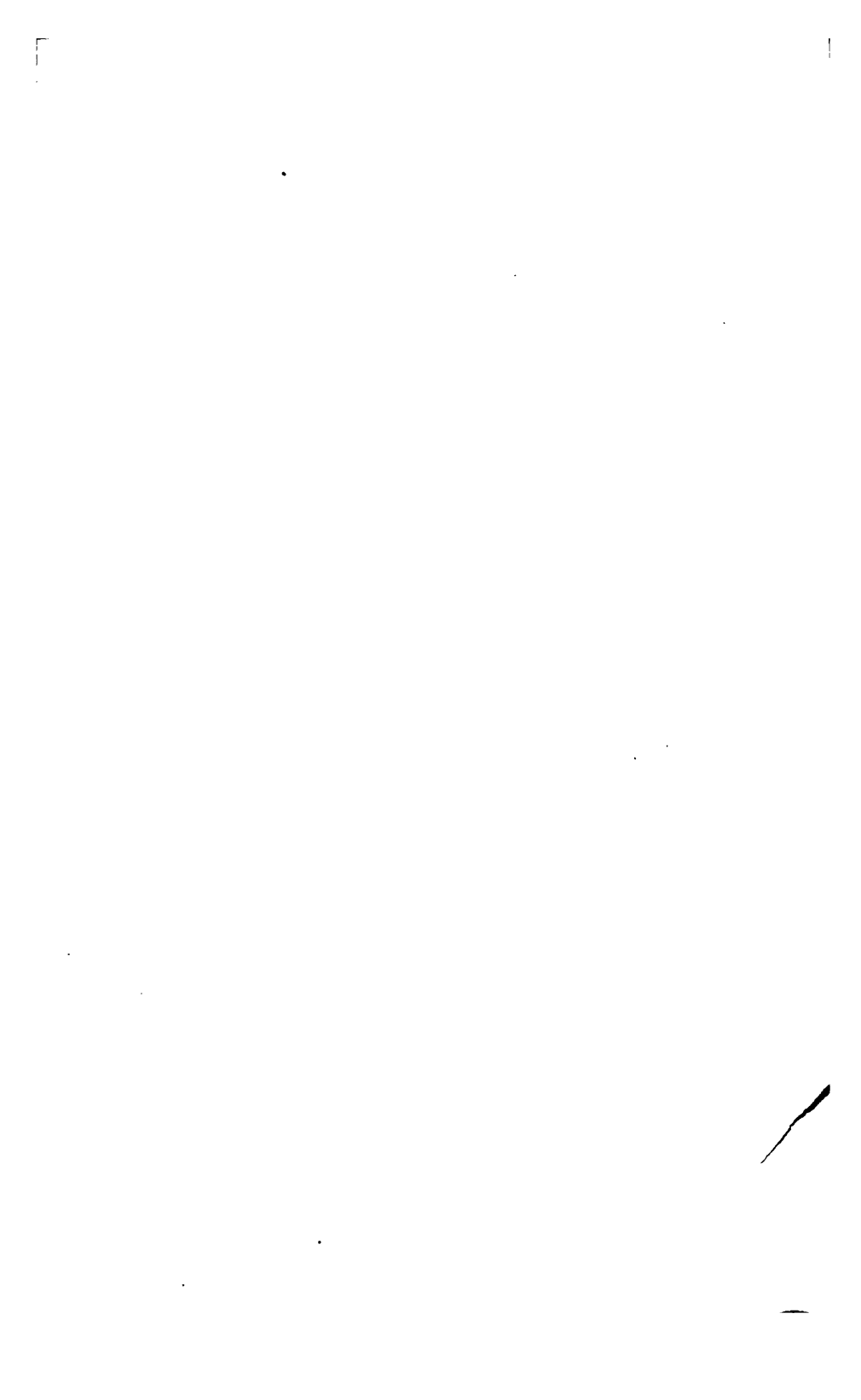
Kent has been long celebrated for the quantity of cherries it pro-

duces, and it appears probable that in this part of England, the trees were first planted. It was supposed that during the Saxon period, the whole race of cherries brought to this country by the Romans were wholly lost, and, during the reign of Henry VIII. they were re-introduced from Flanders, but the writings of Gerarde seems to prove they were not wholly lost, for he says "the Flanders cherrie differeth not from our English cherrie," &c.

The Cherry seems to have been an highly esteemed fruit by the court, in the time of Charles the first, as in the gardens of his Queen at Wimbleton, in Surry, there were upwards of 200 trees.

Cherries, when eaten to excess, are unwholesome, and *vice versa*. It has been asserted, (upon what authority we know not,) that if eaten fresh from the tree, while the morning dew is upon them, swallowing the stones also, they will purge so effectually as to cure those who have the gout in their feet. When dried they are much esteemed for winter puddings; and the wine made from this fruit much resembles *Red Constantia*, both in colour and flavour. The small black ones, with good brandy, produce one of the most wholesome, as well as agreeable liqueurs. The gum which exudes from the tree is analogous to Gum Tragacanth. A variety of the small fruited Bird-Cherry (*Cerasus avium*) is used in the Vosges and the Black Forest, for the preparation of the liquor known by the name of "Kirschenwasser," and the leaves are employed as a substitute for tea. The kernel of the *C. occidentalis*, is used for flavouring the liquor *Noyau*. Dr. Clarke says, the Swedes flavour their distilled spirits with the blossoms. The Finlanders use a strong decoction of the bark to cure syphilitic complaints. A decoction of the fruit is sometimes given in dysentery. The wood is next to oak for strength, and has some resemblance to mahogany; it is much in request for making chairs, musical instruments, &c. The timber comes to perfection in about forty years.

At Hamburg there is an annual feast celebrated, called the "feast of cherries," when children, carrying green boughs ornamented with cherries, parade the streets; it originated in the following circumstance: In 1432, the Hussites threatened the city with immediate destruction. The citizens, at the suggestion of a person named Wolf, agreed in this emergency to send all the children, from 7 to 14 years of age in mourning as supplicants to the enemy. The chief of the Hussites was so touched at this spectacle, that he received the young supplicants, regaled them with cherries and other fruits, and promised them to spare the city. The children returned crowned with leaves, holding cherries and crying "victory!"





LATE DUKE CHERRY.



BELLE DE CHOISY CHERRY.

The varieties of cherries are now numerous, we have selected two for illustration, which will be found well worthy of culture, viz :—

THE LATE DUKE, or *Cerise Anglaise tardive, of the French.*—This sort is but partially cultivated in this country at present, owing, no doubt, to the kind not being sufficiently known; those sold at the nurseries under that name, are nothing more than the Old May Duke. The Horticultural Society possess the genuine kind, through which medium, it will, we hope, be extensively diffused through the country. The fruit ripens on a standard in August, and independent of its value from the period of its maturity, is of considerable excellence on account of its appearance, size, flavour and productiveness. The branches are of more vigorous growth, but more spreading than those of the May Duke, and the leaves are larger, the fruit is the size of a May Duke, the skin a rich shining red, flesh tender, juicy, rich, and of excellent quality. The stone is rather large.

BELLE DE CHOISY.—This is a fruit of French origin, and was received into the London Horticultural Society Gardens, from M. Noisette of Paris. It is also known in France as the *Cerise de la Palembre*, and *Cerise Doucette*. It is said to have been raised at Choisy, near Paris, about the year 1760. It well deserves cultivation, being hardy and bearing well as a standard, and being sweeter than any other cherry of this class. The general habit of the tree has a strong resemblance to that of the May Duke, but the branches are rather more spreading, and the leaves more evenly serrated. The fruit grows to a good size, is roundish and depressed at the top; the skin is transparent, red, mottled with amber colour, especially on the shaded side; flesh amber-coloured, tender and sweet; stone middle-sized and round.

PROPAGATION AND CULTURE.

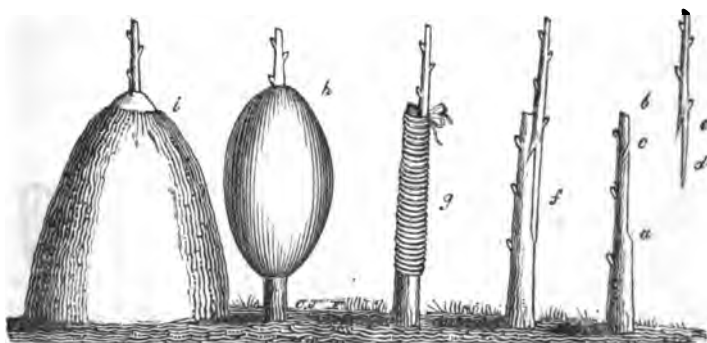
Cherries are propagated by budding and grafting, chiefly on stocks of the small wild black cherry, which stocks are raised by sowing the stones.

Mode of Sowing the Stones.—In the autumn, dig and dung a piece of good light ground, and form it into beds three feet wide, then draw drills three inches deep, and about eight inches from each other, either lengthwise or crosswise on the bed, then put in the stones about one inch apart in the drills, and cover them with the soil, raking the whole surface level. This should always be done pretty soon after the stones are gathered from the fruit, as they will then germinate so much quicker, than if kept drying a month or two. They will come up the following spring, and if kept free from

weeds, will attain a good height the first summer. In the autumn, transplant them in rows, and cut off their tap roots; and in the following March, head them down close to the ground, and only allow them to throw up a single stem, rubbing off all others as they make their appearance. In the succeeding autumn, plant them on a quarter of good soil, in rows three feet six inches apart, and one foot apart in the rows; but previous to planting them out, select the best, as nearly of a size as possible, for budding as standards. The smaller and less handsome ones, may be planted together for dwarfs: these latter are generally grafted, whilst the former are budded. Those intended for dwarfs will be ready for grafting the following spring, whilst the standards will, at least, require another year's growth, as they should not be budded less than six feet from the ground. Dwarfs and standards should never be indiscriminately mixed, except in singular cases, as where the stock intended for a standard did not reach the proper height for the purpose, &c. for the dwarfs never make good plants, when growing under any shade.

Grafting Dwarf Cherries.—The system of grafting generally practised upon all small stocks is "tongue-grafting;" to be performed in the following manner:—Lop off your stocks at about four inches from the ground, and with a very sharp grafting-knife cut, at one pull, a thin strip of wood from about two inches below your already shortened stock, as (Fig. 31, *a*, *b*.) Then rather less than half way

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down this cut, cut a thin tongue, not more than three-eighths of an inch long. (*c*) Proceed nearly in the same way with the bottom part of the scion, and cut first a narrow strip of wood, only do not leave a shoulder, as in the stock, but make a sloping cut of about the same length as that in the stock. Then make a tongue to correspond with that in the stock; place the scion upon the stock, fixing one tongue with-

in the other, (*f*) making the edges of the bark of the scion, and the edges of the bark of the stock meet precisely, for on this your success depends. The two parts thus joined, must be bound closely together by bass matting (*g*), and this, if well and smoothly tied, will almost be sufficient. But to prevent all evil effects from parching drying winds, a ball of well-beaten clay should cover the whole matting, (*h*) and to prevent this ball of clay from being washed off by heavy rains, draw up the earth round the whole plant, so as nearly to reach the top of the clay (*i*). In about a month, it will be seen whether the grafts will grow or not; if they die, strip the stocks from their incumbrances, and encourage them to grow; but on the other hand, if the scions grow, be careful to rub off all shoots growing from the stocks. And as the scions begin to put forth branches, place a small stick in the ground by the side of them, and tie them with a bit of matting, to prevent their being broken by the wind.

Budding Standard Cherries.—The proper season for this operation is the middle of July to the end of August; or in fact, as early and as late as the bark of the stock will freely separate from the wood, and when the buds formed on the spring shoot of the same year, have a nice plump appearance. Let the budding be done early in the morning, or late in the evening, unless the weather be cloudy. The mode is this:—cut off a spring shoot with good buds from the tree you wish to propagate; take this branch in your left hand having the thick end downwards, and make a sloping cut from about one inch and a half below the bud, to about an inch above it, allowing your knife to enter half way into the wood. Cut off the leaf where the bud is seated, but leave the footstalk remaining, presenting the appearance of Fig. 32, (*a*). Put this footstalk between your lips, hold it there whilst with the budding-knife you cut two straight

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lines through the bark of the stock, if possible, on the northern side, in the form of a T (*b*). Then take out the wood from the bark on which the bud is fixed, in doing which be careful not to take the heart or root of the bud away with it. You must, therefore examine after the wood is disengaged, for if the heart be gone, a small hole will be perceivable; in this case, you must try another. After the bud is ready, take the ivory haft of your budding-knife, or for want of that, a piece of wood

cut flat with sharp edges, and raise the bark of the stock within the perpendicular bar clearly down to the wood; having opened these sides wide enough to admit the bark on which the bud is fixed, insert it flat against the wood of the stock, cut off the upper end of the bark attached to the bud, that the edges of the bark of the stock, and the bark of the bud meet at the cross-bar of the T; then bring the bark of the perpendicular bar over the bark of the bud until it has the appearance of (c); take a piece of well-soaked matting, and begin to bind an inch below the long bar, to an inch above the cross-bar; let this be done tightly and without twisting the matting as (d). In a month, if the bud lives, loose the bandage, and in about a fortnight afterwards, remove it altogether.

They require no more attention till the following spring, when just as the sap begins to be in motion, head the stock down about half an inch above the bud, or it may be left about four inches long, and the shoot as it grows, may be tied to it by a bit of matting.

In the following October, they may be planted in the situations intended for them. They thrive best in a moderately light sandy loam, on a dry bottom. The May Duke, however, will thrive in almost all soils or situations; but in gravelly soils they seldom grow so freely, and are not uncommonly diseased. Walls, when any can be spared for the purpose, greatly improve the flavour and size of the fruit; an east or west aspect, or even a south for the first crop, and a north wall for the later ones. Plant standards in an orchard from twenty to twenty-five feet apart, and dwarfs against a wall about twenty feet apart. In the following April, when the buds begin to break, cut each plant down to within three or four inches of the place where it had been budded, thin out the shoots when they have grown an inch or two long, rubbing off all the ill-placed ones, so that not more than four will remain; lay these in at full length.

For Espaliers and Walls, grafted trees are reckoned the best, cut them down in the same manner as budded standards, and train their branches out carefully, either in an horizontal or fan form, do not allow the spurs to become long, and stand at a great distance from the wall; when they begin to exceed three inches, cut them out: but the most advisable method is, to cut away some of the old branches in the winter pruning, and train in a young shoot which will be filled with short spurs, and come into bearing the second year, when some more of the old branches may be taken off; and thus a regular supply may be obtained. The usual time for the first summer pruning, is about the middle or end of May, and the last in July; it is not advisable to be too lavish with the knife during the

summer prunings, as the shoots cut are often liable to die, and appear like unsightly stubs, which sooner or later bring on canker.—The Morella requires very similar treatment to peaches and nectarines, as like them, it bears on the shoots of the last year's growth; its bearing wood, however, must not be shortened like peaches, but laid in at full length.

Forcing of Cherries.—Two centuries ago, the gardeners of France accelerated the ripening of cherries, by laying hot lime-stones on the ground under the trees, and watering the ground with hot water, since that time so many successive improvements have been carried into effect, that cherries which are the most difficult of any kind of fruit to force, may now be ripened early with the certainty of a good crop. This may either be done by trees trained in the house after the manner of peaches, or planted in pots or tubs. The border for the cherry-house should be composed of light rich turfy-loam, with a small portion of lime mixed with it, make it about four feet deep, and lay at the bottom a good portion of broken brick rubbish, to keep the roots from penetrating into the under strata of earth. None force so well as the May Duke, although the Morella will produce good crops in the forcing-house, it seldom comes into use much before the early sorts, and ripen in the open air, and then is often so deficient of flavour as scarcely to be worth eating. They may be either planted in rows in the pit as dwarf-standards, or trained to trellis on the back wall, whilst they are small, plant *riders* to fill up the vacancies. Take all up with as much care and as good roots as possible, and plant them again no deeper than they were before: let this be done in October, and in the following March, cut them well in, but do not by any means attempt to force them the first year. November, however, is the proper time to cut trees in an old house intended to be forced the following season; but cherry-trees forced seldom make much wood, therefore very little pruning is required.

The period of forcing must be regulated according to the time the fruit are wanted, it is never well to begin before the end of December, and, indeed, there is more safety of a crop if not began till the middle or end of January, they will then take about fourteen or fifteen weeks to bring them to perfection; at the commencement, always allow the sashes to be placed on the house a week or more before any fires be made in the flue. When firing is commenced, do not allow the thermometer to rise above forty by day, and thirty-five by night. Keep this heat and give abundance of air night and day. In about three weeks, it may be gradually raised to forty-five deg. by

day, and forty by night. When the flowers begin to open, which will be about five weeks from the time of closing the house, raise up the heat to fifty by day, and forty-five by night, and give air at the top sashes during the day. Should the sun heat be strong, do not allow it to raise the thermometer above sixty. After the fruit is set, increase the heat to 60 by day, and 45 by night, and syringe the trees well with clear water, to cleanse them from filth. At the time of stoning, diminish the heat to 50 degrees by day; if there be much sun-shine, syringe two or three times a week, and in the middle of the day give a slight shade with netting. If the weather be very rough and boisterous, they must not be deprived of air; a little thick netting or gauze might be placed in the apertures through which the air is admitted to break the force of the wind, but be careful to allow no violent draught of wind to continue passing through any part of the house, so as to act upon the tree. (See Mr. Stafford's Observations, page 193.) If the weather be damp, stronger fires must be made to counteract its effects, but the glass must not be allowed to range higher than fifty degrees. When the stoning is completed and the fruit begins to swell, raise the temperature from sixty to sixty-five degrees; and if the weather be fine, syringe pretty often. In raising the temperature at different times, let it be done very gradually, as any sudden changes may endanger the crop. When they begin to ripen, keep up a brisk heat, give abundance of air, keeping the house dry, and they will ripen with a good flavour.

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From the commencement of forcing, to the time of the fruit beginning to change, whenever water is syringed on the trees, let it be of the same temperature as the house. At the time the trees are in blossom, when water cannot be sprinkled on the trees, occasionally throw it on the flues. We consider the best plan for a cherry-house to be this, Fig. 33. The construction is so simple, that

any common artizan can build it. The outer walls (*a*) are made of wood nailed to posts sunk in the ground, the trees are planted in rows three feet apart in the pit (*b*), at the bottom of which is laid a good thickness of brick, or any other coarse hard rubbish (*c*), the soil of the pit being held up by a brick wall (*d*). A flue heated by one fire runs completely round the house; a few inches above it, a walk (*e*) is made by nailing cross-bars of wood, four inches broad, to long bearers lodging on one side on supports in the cavity, being nailed on the other to the outer walls, leaving about the same space betwixt each bar, to allow of the heat rising from the flue into the house. The roof is supported by pillars, which are sunk at proportionate distances down to the brick rubbish, where they have a firm bottom. The lights are moveable, being made either to slide or prop up; the walk is sunk below the ground level (*f*), and the entrance is by means of a step or two.

To Force Cherries in Pots or Tabs.—The dimensions of the pots must of course be proportioned to the size of the trees; the soil must not be rich and highly manured, for they will then grow too luxuriant. The best composition is common light loam mixed with leaf-mould. Plunge the pots where they will be sheltered from the cutting winds and exposed to the sun, in which situation they must remain till they are brought into the house. The plants need only remain one year in pots before they are forced, viz: from autumn to autumn. If taken into the house at the end of December, they will ripen their fruit about the beginning of April. If they are brought in about the end of January, they will ripen about the middle of April. If brought in about the middle of February, they will ripen about the end of April, or the beginning of May, being generally about a fortnight earlier than if planted in a border and trained on trellis.

After the pots are placed in the house, give them occasional waterings with drainings of the dung-hill, instead of constantly clear water; but syringe them only with pure water, and the temperature of the water, both for the roots and tops, should be from sixty-seven to sixty-eight degrees, Fahr. Give plenty of air, as recommended before, and treat them similar in every way to those trained on the trellis or back wall. The number of three dozen, brought in at different times, will produce abundance of fruit from the beginning of April until the fruit ripens in the open air. Those who have not a house devoted to cherries, may place a few pots in a greenhouse about the beginning of January, and allow them to stand there till the stoning season is over, and then place them in a stove to ripen off.

When the fruit is gathered, expose the wood both of those in pots

and those planted in the house to the open air, until about a week before the recommencement of forcing.

It has also been found, that very early fruit may be obtained by planting trees in pots filled with a mixture of two years' old saw-dust, and a little powdered unburnt lime, and put into the house as the others. Of course, the trees treated in this way, are not permanent.

Diseases and Insects that infest Cherry Trees.—The most common insect is the black fly, (*Aphis Cerasi*). Where this occurs in houses, it is readily extirpated, by fumigating with tobacco; but on the open walls, it often injures the trees, for want of being effectually eradicated. Many kill them with the hand, and then with an engine or syringe, the former is the best, wash off the dead insects. This diligence repays the gardener, by keeping them from becoming so very numerous; but it is necessary to repeat it every week, or the trees would be overrun. Others *puff* snuff at them for days together: both these means, if followed up, are a great trouble, and rob a gardener of the time he can badly spare at that season.

Some of the best methods of destroying them, that has come under our notice, are the following. Immediately after pruning in winter, make up a mixture of the following ingredients:—Take two pounds of soft soap, two pounds of sulphur, two pounds of tobacco, and three ounces of *Nux Vomica*; put these ingredients in about nine gallons of soft water, set it on the fire, and keep it simmering until it has evaporated upwards of two gallons, then pour it into another vessel, clearing it from any settling of tobacco, and add a quarter of a pint of spirits of turpentine: wash every branch over with this new milk warm, by means of a painter's brush, then nail the trees, and again work some of it into the nail-holes by means of a syringe or engine, till every part both of the tree and wall shall be well moistened with it. The black fly rarely appears on trees thus treated: the expense is not much, and the trouble of it happens when time can be readily spared for the purpose: if, however, they should appear at spring, make a mixture of soap and tobacco-water in the proportions of one pound of soft soap, or even common soap, to ten gallons of tobacco-water; (if the tobacco-water be very strong, add two gallons of soft or river water to it.) This mixture must be made quite warm, and be used with a syringe or garden engine, just after the fruit is set, or at least betwixt that and the stoning season, repeat it two or three times, and they will disappear; if the trees be washed with soap-suds any time during summer, except when the fruit is ripening, it will be of exceeding service.

Another class of destructive depredators are caterpillars, and as they roll themselves up in the leaves, it is not easy to come at them with any mixture. In such a case, the best way is to gently pinch every curled leaf, so as to effectually kill its inmate. Their depredations, however, may be greatly diminished by applying about a week or fortnight before the blossoms open, with a garden-engine or syringe, a mixture of soft soap and weak tobacco-water. No trees, however, must be washed with liquid when the fruit is ripening, as it would materially injure the flavour. But if the winter dressings be attended to, there will rarely be either caterpillars, or any other insects infesting them.

Young cherry-trees very frequently die after a wet season, this is, no doubt, caused by the wood being unripe and distended. To prevent this, when it is considered the tree has made wood enough, dig a trench two feet deep and one broad round the young trees, at the distance of from one to seven feet according to the size of the tree: this will prevent the roots from taking up too much moisture, and will give the young fibres a check. If this be attended to, very few, if any, young cherry-trees will prematurely die off.

JOSEPH PAXTON.

FLORICULTURE.

ARTICLE V.—ON THE CULTIVATION OF SEVERAL SPECIES OF CALCEOLARIAS.

BY MR. PLANT, CHEADLE, STAFFORDSHIRE:

CALCEOLARIAS, particularly the perennial herbaceous species, are now become very numerous, and in general are so beautiful, that they deserve a considerable share of attention; indeed, I know of no plants more calculated to give a greater degree of interest to the flower-borders during the summer months than they are; and by judicious management, the greater part may be made to contribute not a little to the decoration of the greenhouse, during October and November.

There cannot be a doubt but every year, many new varieties will be added to this already beautiful genus, and in a few years, as Mr. Sweet observes, the species and varieties will become as numerous, as the extensive family of geraniums, and be equally as easy of culture. I am now in possession of upwards of thirty hybrids, and truly, I do not know any plants that can with more propriety be cal-

led perennials. I have no doubt but all the British hybrids will stand well in a cold frame, or in any situation protected from heavy autumnal rains and intense frost. When planted in light soil, most, if not all of them, will live through the winter, having no other protection than an inverted flower-pot, full of dry litter standing over them. It is true, these will never flower so early or elegantly, (at least none of the sorts I am acquainted with) as when they have had a good winter protection. My calceolarias, last summer, were the admiration of all who saw them; and from the repeated enquiries as to my manner of treatment, by persons far superior to myself in practical knowledge, I have been induced to forward you the following remarks.—The Calceolaria Youngii may be grown to the height of three feet or more, with 160 to 200 flowers in perfection at one time, and in this state it is a most enchanting object. But to the culture,—I will suppose that in December you have good plants for blooming the following year, and that they are in forty-eight sized pots, standing in any airy part of the greenhouse. As soon as the roots push through the holes at the bottoms, place them in pots a size larger, being careful to disturb the roots as little as possible. In a month, the roots will again be making their appearance, repot them again as before. About the beginning of March, the roots will again have progressed, and you may place the plants in large pots, the size we here call half-gallons, (twelves). Particular attention should now be paid to air and water; always keeping the soil just moist, but never allowing it to be saturated, which must be considered a rule at all times. About the end of April or beginning of May, remove the plants from the greenhouse to a cold frame, for ten days or a fortnight, to harden them gradually, previous to being placed in the situations where they are intended to bloom. If they are to flower in pots, the size used is what we call peck pots, and these should be well drained with potsherds according to the hardness of the pots; and afterwards filled with the following compost: viz. two parts of fully decomposed stable manure, one part of leaf or vegetable mould, and one part of fine white sand, or in the absence of that, one part of sandy-peat. Mix these well together, and beat the compost fine, rubbing it through the hands to break the lumps; for this process will answer much better than sifting. This compost is suitable for *C. youngii*, *farinosa*, *fusca*, *picta*, *picta pallida*, *Atkinsonii* and *Morrisoni*.

The polyantha is, according to my taste, one of the most interesting of the yellow flowering species; the individual flowers are not so large as some of the others, but the very elegant habit of the plant, and the profusion of flowers it bears, render it very striking. I had

a plant of this sort, treated as above, in full flower last July, formed a complete cone two feet and a half high, with at least 500 blossoms of the full size at one time; but I find this, together with *C. Wheeleri*, *atrosanguinea*, *Hopeana*, *Youngii-pallida*, *Epsomiensis*, *monstrosa*, *pulchella*, white and crimson, ochre and crimson, and cream and crimson delights in a compost something different from that recommended for *C. Youngii*, &c. Instead of any vegetable mould, add to the dung and sand one-fourth part turfy loam, as free as possible from oxide of iron. I possess many other fine hybrids, but not having tried them in different soils, I am not so well able to speak about them at present. To have any fine sorts in flower late in the autumn, nothing more is necessary than, as soon as the terminal flowers of the principal racemes are got to the full size (I am supposing the plants to be blooming in pots during summer,) to cut the entire branches down to within an inch of the surface. Then take off about an inch of soil, and replace with fresh compost *sifted*; this will in general happen about the end of July. When this is done, place the plants in a cold frame where they can be sheltered from rains by a covering, and in about a month, they will be fine vigorous plants, producing plenty of flower stems, which will flower in the greenhouse during October and November. The sorts best calculated for the second blooming are—

Calceolaria Youngii.

Calceolaria, Cream and Crimson.

—— *polyantha*.

—— Ochre and Crimson.

—— *Youngii pallida*.

—— *Wheeleri*.

—— *picta*.

—— *farinosa*.

—— *picta pallida*.

—— *monstrosa*.

—— White and Crimson.

—— *Atkinsonii*.

—— *atrosanguinea*.

If, contrary to my expectations, you make use of this paper, I may shortly trouble you again.

JOSEPH PLANT.

Cheadle.

ARBORICULTURE.

ARTICLE VI.—ON PLANTING AND PRUNING FOREST TREES.

NEMO SIBI VIVAT.

THE art of judicious thinning and pruning, as practised by a few modern planters, is calculated to accelerate, in an extraordinary degree, the power of raising timber, the fountain of national wealth with the

and independence, and the source of individual prosperity and riches.

Observe a plantation which has not been cautiously or judiciously thinned and pruned. the trees which exist will be drawn up to poles or spires, with narrow and scanty tops, endeavouring to make their way upwards to such openings to the sky, as might permit the access of light and air. If entirely precluded by the branches which have closed over them, the weaker plants will be found strangely distorted by attempts to get out at a side of the wood; and finally, if overpowered in their attempts by the obstacles opposed to them, they inevitably perish. As men throw aside their garments, influenced by a close situation, trees planted in similar circumstances, exhibit a bark thin and beautifully green and succulent, entirely divested of that thick, coarse, protecting substance, which covers the sap-vessels in an exposed situation.

Were trees, as well as other plants, judiciously adapted to their peculiar soils and situations, that extensive and sterile waste, which now impoverishes the country might be much diminished. Lands are barren, not so much from the nature of the soil, as from its not being properly managed. There are trees and plants well fitted to varieties of climates, perhaps so much so, as to bear transplantation from the plains of Lombardy to the skirts of London. Providence has undoubtedly been more kind in this respect, than we seem to have yet discovered. To select, appropriate, and naturalize some valuable Exotics to British soils and climate, the sister arts of Botany and Chemistry, will lend to Agriculture their willing aid. While we have such extensive wastes capable of bearing firs and pines without number, why must we be indebted annually to foreign nations? Why must we depend upon precarious treaties, for such great quantities of pitch, tar, rosin, and turpentine? Mr. Birbeck, in his notes on America, observes, "one of the most striking features in the great Western Wilderness, is the magnificent growth of the vegetable kingdom." In one place beyond the Ohio, he measured a fine walnut tree, about seven feet in diameter, or thirty-one in girth; two sycamores of equal dimensions were decaying in its neighbourhood. But the white oak, he says, is the glory of the Upland Forest, as they generally grow in thick groups, their stems are by no means so large as they would be if they stood single; but they are lofty and straight in an extraordinary degree, sometimes eighty or ninety feet *without a branch*. Mr B. measured one which was six feet in diameter, at seventy feet from the ground. This is a gigantic growth almost unknown in our hemisphere. For miles together and in view of the road were thousands of them, whose stems were

fourteen or fifteen feet round and rising straight, and without a branch (shewing the advantage of removing side branches) for seventy or eighty feet, where they were crowned with luxuriant tops.

An intimate knowledge of the habits and growth of the different species of forest trees, and the influence of soil and local climate on their periodical increase of timber is absolutely required in the business of valuing plantations prospectively.

It seems an extraordinary fact in Natural History that wherever the original forest is destroyed in America, and the land left uncultivated, trees of a different species should spring up. This is always observed where lands have been laid waste by fire. The first year tall weeds, raspberry and bramble bushes shoot up, then cherry trees, white birch, silver firs, and white poplars appear; but seldom any trees of the genus previously growing on the space laid open by the devouring element.

The great trees of the fir, maple, black birch, and beech tribes, when once destroyed, do not seem ever to be succeeded in the ground they occupied by trees of the same kind. On the banks of the Seneca lake, land formerly covered wholly with spruce, fir, and birch, having been laid waste by fire, produced subsequently nothing but poplars.

AN OLD PLANTER AND PRUNER.

NATURAL HISTORY.

ARTICLE VII.—ON THE STUDY AND SCIENCE OF BOTANY.

BY F. F. ASHFORD.

(Continued from Page 223.)

OF Luxuriancy in Flowers.—A flower is said to be luxuriant when some of the parts are augmented, and others thereby excluded. The part multiplied is usually the corolla, but sometimes the calyx also, and by the increase of the covers, the essential parts of the fructification are destroyed. Luxuriant flowers are divisible into

- | | |
|-----------------------------|---------------------------------|
| 1 Multiplicate, multiplied. | 3 Proliferous, producing young. |
| 2 Pleni, full. | 4 Mutilate, maimed, deficient. |

1. *Multiplicate.* Flowers are so, when by the increase of the corolla, only a part of the stamina are excluded, and this distinguishes them from the flores pleni, (full flowers.) Multiplier with the

flowers are distinguished into Duplicate, Triplicate, Quadruplicate, that is, having a double, treble, or quadruple series, or rows, according to the number of the repetitions of the corolla. Polypetalous are the most subject to multiplication, the Monapetalous are multiplied likewise, but it is very uncommon to meet with them full.

Pleni.—Flowers are said to be full when the corolla is so far multiplied as to exclude all the stamina. The plenitude (fulness) is occasioned by the stamina running into petals, with which the flower is so crowded as frequently to choke the pistillum.

Plenitude is chiefly incidental to polypetalous flowers, yet in monopetalous some authors hold a contradiction, but this cannot be granted, for there are instances of it in *Crocus*, *Hyacinthus*, *Polyanthus*, &c. though it is rare when their luxuriance passes duplicity. When they are filled, it is by the multiplication of the Laciniae, (segments) whereas the polypetalous are usually filled by multiplication of the petals, but the manner in which the impletion (filling) is brought about must be more particularly considered.

The Impletion is either in simple or compound flowers. The Impletion of simple flowers is by the increase of the petals, or of the nectarium, as for instance, the impletion of the *Aquilegia* is observed to be after three different manners, viz.

- 1 By multiplying the petals, and excluding the nectaria.
- 2 By multiplying the nectaria and excluding the petals.
- 3 By multiplying the nectaria, and retaining the petals.

Compound flowers gain their impletion two ways, either by the radius, or the disk. Impletion by the radius, is when, by the multiplication of the radius, the disk of the flower is filled up as in *Helianthus*. In this sort of impletion, which belongs only to radiate flowers, it is observable that all the florets which will fill up the disk, follow the conditions of those of the radius. So if the florets of the radius in the natural flower, have a pistillum, all those of the full flower, will have one also, as in *Matricaria*; or if they have no pistillum, then it will also be wanting in the full one, as in *Calendula*. And the same holds true in the male part also, for as the florets of the radius in the natural flower, are never furnished with anthera, so these are wanting also, in those of the full ones. This last remark is of great use to distinguish a radiate full flower from a ligulate natural one, which might be confounded in many cases, were we not apprised that there are anthera in the latter, but none in the former. By this rule, when the disk is destroyed by the multiplication of the radius, we know by the defect of anthera, that it is only the luxuriance of a radiate flower, as in *Sonchus*. By the presence of the anthera we know the flowers to ligulate and natural.

Impletion by the disk, is when there is no multiplication of the radius, but the corollulæ of the disk, run out into length, and have their brims less divided. In radiate flowers, it will so far affect the radius, as to change its flowers from ligulate to tabulose, as in *Bel- lis*. In ligulate flowers, their impletion is by the lengthening of the stigmata, and the enlarging and diverging of the germina, by which augmentations the full flowers are distinguished from the natural ones, as in *Scorzonera*.

3. Proliferous. When one flower grows out of another, it is called proliferous; this generally happens in full flowers, the fulness being the cause of their becoming proliferous. Prolification happens two ways, viz. :

1. From the centre, which happens in simple flowers; that is, when the pistillum shoots up into another flower, standing upon a single peduncle, as in *Dianthus*, *Ranunculus*, and others.

2. From the side which happens in aggregate flowers, that is, when many pedunculate flowers are produced out of one common calyx, as in *Bellis*, *Calendula*, *Scabiosa*, &c.

In umbellate flowers, the prolification is by the increase of the umbellulæ, one simple umbellula producing another, as in *Cornus*. Compound, (more than compounded a second time,) as in *Selinum*. A proliferous flower is called Foliaceous, (leafy) when it produces leaves, (but which seldom happens,) as in *Rosa*, *Anémone*, &c.

4. Mutilate flowers are the reverse of luxuriant; this term applies to flowers that want the corolla, though they ought to be furnished with it, as in *Ipomea*, *Viola*, *Ruellia*, &c.

(To be Continued.)

F. F. ASHFORD,

Mere Hall, Cheshire.

ARTICLE VIII.

ON THE THEORY OF RAIN.—BY NIL DESPERANDUM.

A CORRESPONDENT of the Field Naturalists' Magazine, in an article quoted in your *Register*, has undertaken to refute the established theory of the formation of rain.

That what he gives as such, is the established theory, I deny; and I have given one of the many received ones in the following answer to his first objection.

For the first objection, viz. : "that water requires a heat of 60 degrees with the

Fahr. to raise it in vapour, and that we have most rain when the air is at 50 degs." I answer, that the first part of the assertion has no foundation, as water will evaporate at a heat of less than 40 degs. and that for the second part to help his argument, we must suppose, for example, the evaporation of the water, and the recondensation of the vapour, to happen at the same time: but the vapour of water being lighter than atmospheric air, in the proportion of ten to fourteen, will ascend to the higher regions of the atmosphere, and and through it will be there condensed, it is not by a sudden change, but first passing into the state of small hollow globules, still containing vapour, in which form it is called vesicular vapour, this forms the clouds, which, being of the same specific gravity as the air, float about in it, but being gradually condensed, descend in proportion, and finally fall in the shape of rain.

To his second objection, viz. "that when we have the greatest heat, as in summer, we have the least rain," I answer that though in winter we have the most rainy days, yet in summer, and the warm parts of autumn and spring, we have the *greatest quantity of rain*.

His third objection, viz, "that the vapour from the water, on rising to the height of 100 yards, would be condensed and immediately fall, like the water from the refrigeratory of an alembic," I have answered in my first paragraph, and the simile seems to me not to help his cause, as all the vapour from an alembic is not condensed, unless an artificial degree of cold is applied, that is only to be found in the highest regions of the atmosphere.

His fourth argument, "that we have the most rain at nights, and in winter," tells against him, for it is natural that a cold night should condense the vapour raised by the heat of the day, and the presence of the sun's rays is not at all necessary to raise this vapour, the mere warmth of the air being sufficient, witness the evaporation of water in a cold room.

In these first objections, especially in the second, he has allowed, nay partially founded his arguments, on the fact of water being raised in vapour by the sun; but in the next he denies this fact, on the strength of a glass not being moistened when held over a river; certainly it will not, while the air remains sufficiently hot, not to condense the vapour, but when the air cools, by the absence of the sun, the vapour *will be* condensed on the glass and will be visible in the air, on account of such condensation.

As to the sixth argument, "that there always should be most rain in tropical climates, were the old theory true," I say, that it is not necessary that the vapour raised in one part of the earth, should al-

ways fall in rain at the same part. There is not a day throughout the year on which rain does not happen at some place, and the tropical winds, aided by the constant heat of the atmosphere in the torrid zone, would sufficiently account for the absence of rain during the chief part of the year in that climate, not to mention the immense fall of rain that takes place there in the winter months.

There is another Theory of the formation of rain, depending on the fact, that the quantity of vapour capable of being diffused through the air increases in a greater ratio than the temperature of the air; and thus, whenever two masses saturated with vapour are brought into collision by the currents of wind, the atmospheric condensation takes place, the mean temperature produced not being able to support the mean quantity of vapour. If the masses of air are not quite saturated with vapour, less precipitation of rain takes place, or perhaps none at all; and the warmer the temperature of the masses, the greater the precipitation; this accounts for rains in summer being heavier than those in winter, and in hot countries heavier than in cold. By neither of the above theories would I wish to assert, that rain is formed in no other manner than is therein stated. The formation is very little understood as yet, and a great quantity, perhaps the most part of rain may be produced by electrical changes in the atmosphere of which we are ignorant, and of which in the present neglected state of science in this country, I am afraid we are likely to remain.

NIL DESPERANDUM.

Highgate Grove, April 10th, 1833.

ARTICLE IX.

COLLECTIONS AND RECOLLECTIONS.

REAPING UNRIPE WHEAT.—In the year 1820, it was announced by M. Codes de Vaux, that corn reaped eight days before the usual time, was not only secured from the accidental loss by the scattering of the grains, but that the grain was fuller, larger, finer, and that it was not liable to the attack of the weevil. The produce per acre was more, and the quantity of flour greater, from equal quantities of wheat. I should be very glad to know, if any experiments have been made in this country, and with what success; as it is a subject of the highest importance.

C. C. C. ^{pre.} ch the

London, April 2nd, 1833.

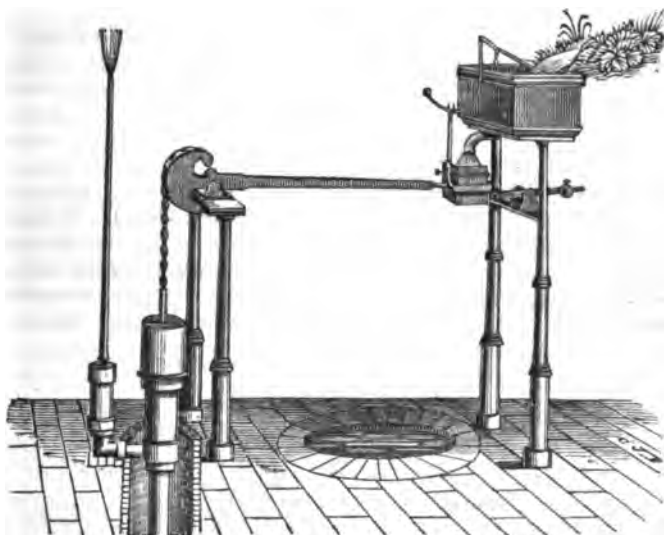
TO PRESERVE WALL-NAILS FROM RUSTING.—I beg to communicate a little valuable information to those who use many nails for fastening the Wall Trees. I use cast nails about one inch and a quarter long, and heat them pretty hot, in the fire-shovel, over the fire, but not red, and then drop them into a *glazed* flower-pot saucer, half filled with train oil. They absorb a good deal of oil, and thus prepared never become rusty, and will last many years. The effluvia of the oil also, for a long time, I fancy, keeps insects from the trees.

T. B. BUXTON.

Erdington, near Birmingham, April 10th, 1833.

LUCAS'S SELF-ACTING FORCE AND LIFT PUMP, FOR RAISING WATER. (Fig. 34.) This Machine is said to be an excellent contrivance for supplying gentlemen's houses, gar'ens, reservoirs, farm-yards, &c. &c. with water, where, from their elevated situations, it

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would otherwise be difficult to obtain. It may be fixed in all situations in which a small supply of water can be procured; its construction is very simple, and not liable to be out of repair, yet should that happen, it may be readily adjusted. The appendages can be attached to any description of pumps, whether such as are already fixed, or otherwise. The waste of water is very trifling, a very small supply being sufficient to work it, which, if requisite, can also be used. Although we have not seen it act, yet a friend of ours, who has the habit of frequently examining it, pronounces it a most convenient.

CONDUCTOR.

PART II.

REVIEWS AND EXTRACTS.

REVIEW.

ALPHABET OF INSECTS.—SMALL 8vo.—100 PAGES.—PRICE 2s. 6d.

BY JAS. RENNIE, ESQ. M. A.

Professor of Zoology, King's College, London.

THE mere tyro in Entomology, or one who is just entering upon the study of this interesting branch of the science of Zoology, will here find a work well adapted to facilitate his pursuit. It not unfrequently happens, that persons who are extremely anxious to become acquainted with some particular science, are deterred from its investigation by the absence of a suitable guide to its first principles. To such persons we recommend Professor Rennie's Treatise, in which the skin, members, external organs, and growth of insects, as well as their systematic arrangement, are set forth in plain and intelligible language. The scientific terms are illustrated by figures; and in every possible way the author has endeavoured so to simplify the subject, that a diligent student may, in the course of a few evenings, become acquainted with its leading features. We observe, that in pages 18, 79, 80, and 81, the antennæ are styled ears, and the thorax corslet; and some other terms are also introduced which may offend the more scientific portion of our readers. But the author's design, as we have already intimated, being to adopt the utmost simplicity, as tending to more general utility, we rather applaud than censure such a practice.

EXTRACTS.

HORTICULTURAL INTELLIGENCE.

CULTURE OF CABBAGES BY SLIPS.—The slips when taken from the cabbage-stalk, are exposed a sufficient time to the sun and atmosphere to cauterise the wounded part. In the summer twenty-four hours are sufficient, and two or three days in winter; rubbing a little wood-ashes on the part, as recommended by Mr. Lindley, greatly assists in cauterising the wound, and prevents bleeding. Plant them, and they require no farther trouble. After cutting the cabbages, the sprouts again afford a supply of slips for plants, and thus a regular succession of cabbages is secured throughout the whole year, with the certainty of preserving the quality of the parent stock unchanged, and of doing away with the necessity of raising plants from seed.—*Gard. Mag.*

GRAFTING THE WALNUT-TREE.—Suffer the buds of both Grafts and Stocks to unfold and grow during a week or ten days, then destroy the young shoots and foliage. Graft about the middle of May. Attach the grafts to the young (annual) wood of the stocks, placing them so as to stand astride the stocks, one division being introduced between the bark and the wood, or with both divisions fitted to the wood or bark in the ordinary way, both modes being equally successful. In each of these methods, it is advantageous to pare away almost the wood of both the divisions of the grafts; and therefore the wide dimensions of the medulla in the young shoots of the Walnut-tree do not present any inconvenience to the grafter.—*London Hort. Soc. Trans.*

FLORICULTURAL INTELLIGENCE

NEW AND RARE PLANTS, Figured in the Botanicals for May.

CLASS I.—DICOTYLEDONOUS PLANTS OR EXOGENES.

LOASEÆ.

LOA'SA A'LBA.—White-flowered Loasa.—An annual with red and white flowers; introduced last year from Chili, where seeds were collected by Mr. Hugh Cumming. It is of easy culture, thriving in the open border, and continuing to send forth its showy blossoms for several months in succession. It is increased by seeds.—*Br. Fl. Gard.*

CORNEÆ.—Dogwood Tribe.

BENTHAMIA FRAGIFERA.—Strawberry-fruited Benthamia. This valuable addition to our collection of hardy shrubs was raised in 1825, in the garden of John Hearle Tremayne, Esq. at Heligan, Cornwall, from seeds received from his relation Sir Anthony Buller, during his residence in the East Indies. It is a very handsome evergreen shrub, bearing cream-coloured flowers in great profusion during the summer, and producing an abundance of large, globular, red-dish fruit in the autumn. The fruit, when ripe, has considerable resemblance to the mulberry, but exceeds it considerably in size; the flesh is yellowish white, rather insipid, but not unpleasant, although a little bitter to the taste. Culture.—The plant seems to flourish extremely well in common garden soil, and may be increased with facility either by seeds or layers.—*Bot. Reg.*

ANACARDIACEÆ.—The Cashew Tribe.

DUVAUA LATIFOLIA.—Broad-leaved Duvaua. A small shrub, native of Chili, where it seems to be very common, and called *Huingan*. The flowers are small, and of a yellowish green colour. A pretty phenomenon is exhibited by the leaves when thrown into water: after lying a short time, they will be found to start and jump as if they were alive, while at the instant of each start a jet of oily matter is discharged into the water. This circumstance appears to be owing to some peculiar irritability of the parenchyma of the leaves, which, when acted upon by water, causes the turpentine-sacs, that abound in the leaves, to empty themselves with violence; and the movements of the leaves may be ascribed to the recoil produced by the discharge. From the fruit of this or a nearly allied species, we are informed by Dr. Gillies, that the Pehuenco Indians prepare by fermentation an intoxicating liquor. Culture.—It is about as hardy as a myrtle,

requires the same treatment as the *D. ovata*, (noticed p. 182,) and may be propagated by seeds.—*Bot. Reg.*

LEGUMINOSÆ.—The Pea Tribe.

LUPINUS ELEGANS.—Drooping-leaved Lupine. A pretty annual, native of Mexico, whence seeds were sent to the Horticultural Society, by Dr. Deppe, in 1831. It flowers in the open air most abundantly, and ripens seeds by which it is increased. Of all the Annual Lupines, this is by far the handsomest; it even rivals the best of the perennial species.—*Bot. Reg.*

PULTENÆA ROSMARINIFOLIA.—Rosemary-leaved Pultenæa. A greenhouse shrub with yellow flowers, lately found by Mr. Baxter on the south-coast of New Holland. Culture.—It requires to be potted in peat and loam, and may be increased by cuttings.—*Bot. Reg.*

ROSACÆ.—The Rose Tribe.

POTENTILLA GLANDULOSA.—Glandular Cinquefoil. A new species lately received by the Horticultural Society from California, where it was found by Mr. Douglas. It is a hardy perennial, has small yellow flowers, and may be increased by division of the roots, (*Bot. Reg.*) but is scarcely worth cultivation.

EPACRIDÆ.

EPACRIS CAMPANULATA.—Bell-flowered Epacris. A little greenhouse shrub, native of New Holland, whence seeds were introduced in 1830; it bears flowers of a rose-colour yielding in beauty to none of this fine family. It will increase by cuttings, and should be kept in the greenhouse and potted in sandy peat earth.—*Bot. Cab.*

APOCYNÆ.

WRIGHTIA PUBESCENS.—Downy Wrightia. A small stove shrub, native of the India islands, and also of the Tropical parts of New Holland. Its flowers are greenish yellow, not remarkable for beauty. Culture.—It should be potted in loam and peat, and may be increased by cuttings or layers.—*Bot. Cab.*

CLASS II.—MONOCOTYLEDONOUS PLANTS OR ENDOGENES.

IRIDÆ.—The Corn-flag Tribe.

IRIS RETICULATA.—Netted Iris. A beautiful and rare species, possessed by Messrs. Whitley, Brames, and Milne, of the Fulham Nurseries. Flowers purple, blue, and yellow, very handsome. It was originally discovered in Georgia by M. Adams. Since its introduction in 1821, it has been lost, but has lately been re-introduced by M. Hartwiss, Director of the Imperial Gardens, at Nikita, in the Crimea, who sent it to the above nurserymen. It requires a light rich soil, and the shelter of a pit or frame in winter. Culture.—It is increased by offsets and seeds, which may be made to perfect, if the season be favourable, and care be taken to protect the plant from the wet, and to admit a free circulation of air when it is in flower.—*Sw. Brit. Fl. Gard.*

ORCHIDÆ.—The Orchis Tribe.

ZYGOPETALUM STENOCHILUM.—A beautiful stove plant; native of Brazil, whence it was sent to Messrs. Loddiges by Mr. Warre. Its flowers are green, brown, and blue. Culture.—It thrives in the stove, potted in vegetable earth, intermixed with broken pieces of pots, and will occasionally increase by offsets.—*Bot. Cab.*

NATURAL HISTORY.

AMERICAN BLIGHT.—(*Eriosoma Mali*.) In very hot weather, you may now and then see this blight on the wing. It has the appearance of a bit of cotton, or a downy seed, floating in the air, and is as readily driven about by every breath of wind. If it come in contact with the branch of an apple-tree, it will there stick, and after creeping into a crack in the bark, will bring forth its young, and found a colony. The white cotton then soon appears in large bunches; branch after branch becomes infected, the tree grows cankered, pines, and dies. By what process this is effected no one knows, though the cause and effect are too evident to escape the notice of the veriest clown. In large orchards, it is vain to hope for a cure, though not so in gardens. So soon as you see the least morsel of cotton, you should make up your mind to a little trouble, and you may get rid of it. In the first place, take a plasterer's whitewashing brush, and having procured a large pot of double size, heat it till it becomes a liquid, and then paint over every patch of white, though it be no bigger than a sixpence. The next morning, let the size-pot be heated again, and renew the search for the enemy. Repeat the practice every morning for a fortnight, and you must succeed, for I have tried this method, and know it to be effectual. Spirit of tar has been used with partial effect, and so has resin. Whitewashing has been often resorted to, and, as it contains some size, it is not entirely useless; besides, some horticulturalists think it ornamental, though I entertain a different opinion.—**RUSTICUS.**—*Entomol. Mag.*

MOTH INFESTING APPLE-TREES.—This is a beautiful little creature, its wings are studded with silvery shining specks, as though inlaid with precious gems. To find the moth in the day-time, the trunks of the apple-trees should be carefully looked over; or if your orchard be surrounded by a wooden fence, it may frequently be found sitting against it, with its pretty wings neatly folded round it. Towards evening; in fact, just at sunset, it begins to move, and may then be seen hovering about the little apples, which, by the time the moth leaves the chrysalis, (the middle of June) are well knit, and consequently fit for the reception of the eggs. It lays these in the eyes, only one in each, by introducing its long ovipositor between the leaves of the calyx, which form a tent above it that effectually shields it from the weather or any other casualty. As soon as the egg hatches, the little grub gnaws a hole in the crown of the apple, and soon buries itself in the substance. It is worthy of remark, that the rind of the apple, as if to afford every facility to the destroyer, is thinner here than in any other part, and consequently more easily pierced.

The grub, controlled by an unvarying instinct, eats into the apple obliquely downwards, and thus by avoiding the cone and pips in no way hinders its growth. At first it makes but slow progress, being little bigger than a thread, but after a fortnight its size and operations are much increased. By this time, it will have eaten half way down the apple, and the position of the hole at the top, if the apple continue upright or nearly so, is found inconvenient for a purpose it has up to this time been used for, viz. as a pass to get rid of its excrement, which resembles fine saw-dust or coarse sand. Another communication with the outer air is therefore required, and it must be so constructed as to allow the power of gravity to assist in keeping it clear. This is accordingly made directly down-

wards, towards that part of the apple which is lowest; and thus the trouble is saved of thrusting the small particles upwards through the eye of the apple, and a constant admission is afforded for a supply of air without labour. Having completed this work, the grub returns towards the centre of the apple, where he feeds at his ease. And within a few days of being full fed, he for the first time enters the core through a round hole gnawed in the hard horny substance which always separates the pips from the pulp of the fruit. The destroyer now finds himself in that spacious chamber, which codlins, in particular, always have in their centre. From this time he eats only the pips, but he soon causes the apple to fall. Whether the fall of his house gives the tenant warning to quit or not is unknown, but certain it is that he does quit, and that almost immediately. He leaves the core, crawls along his breathing and clearing out gallery, the mouth of which, though before nearly closed, he now gnaws into a smooth round hole, which allows him free passage without hurting his fat, soft, round body. He then comes out, and for the first time in his life finds himself in the open air. He wanders about on the ground till he finds the stem of a tree, up which he climbs, and hides himself in some nice little crack in the bark. In this situation he remains without stirring for a day or two, as if to rest himself after the uncommon fatigue of a two yard's march. He then gnaws away the bark a little, in order to get further out of the way of observation; and having made a smooth chamber large enough for his wants, he spins a beautiful little milk-white silken case, in which, after a few weeks, he becomes a chrysalis. In this state he remains throughout the winter, and even until the following June, unless some unlucky, blackheaded tit, running up the trunk, peeping into every cranny, and whistling out his merry see-saw, happen to spy him; in which case, he is plucked without ceremony from his retreat, and his last moments are spent in the bird's crop. But supposing no such ill-fortune betide him, he will be on the wing by the middle of June.

By burning weeds in your gardens at this time of the year, you will effectually drive away this little moth.—*RUSTICUS.*—*Entomol. Mag.*

PART III.

MISCELLANEOUS INTELLIGENCE.

I.—QUERIES, ANSWERS, AND REMARKS.

WHAT WORKS ON GARDENING WOULD YOU RECOMMEND?—Would you have the goodness to inform me of the best works on the following subjects, with the prices of each, and where I can obtain them? 1. On the Culture of the Pine Apple. 2. On the Culture of the Vine. 3. On Training and Pruning of Fruit Trees. 4. On the Culture of Vegetables, &c. &c. If you can recommend a Work, on the Culture of the Melon, I shall feel obliged. Wreden on the Cucumber, I have recently purchased. I beg pardon for troubling you so much, but having commenced gardening in right earnest, I am desirous of purchasing the above works.

J. G. PALMER.

Davies-Street, Bulkeley Square.

ANSWER.—The best Work we have seen on the pine is entitled "The Different Modes of Cultivating the Pine Apple," in 8vo. 9s. There is no new Work exclusively on the Culture of the Vine; possibly there is none which excels Speechley's. On Training and Pruning Fruit Trees, the one by Mr. Charles Harrison, price 12s. Second Edition, may be considered the best. We are not aware that a good work confined to the Culture of Melons has yet appeared. The proper Culture of Vegetables is to be found in almost every work on gardening, and by purchasing Mc. Intosh's "Practical Gardener," 2 Vols. £2.—our correspondent would find them all plainly treated upon. For more extended information, we refer him to "Loudon's Encyclopedia of Gardening," 1 vol. £2. a new edition of which, we understand, is in the press. This will no doubt contain every improvement in gardening, up to the time of its publication.

MODE OF, AND PRIVILEGES ATTACHED TO, BECOMING A FELLOW OF THE LONDON HORTICULTURAL SOCIETY.—In answer to our correspondent "Suffolk," page 233, as to the mode of becoming a member of the Horticultural Society, we have to state that every candidate for that distinction must be proposed by three or more fellows, one of whom must either be personally acquainted with him or his writings, they have to sign a certificate stating his name, place of residence, &c. This certificate is to be directed to the Secretary, and delivered at the house of the Society. It will then be read at the two following ordinary meetings of the members, and hung up in the room during the intervals occurring between those meetings. At the third meeting, the person will be balloted for, and, if elected, the Secretary will forward him a printed letter certifying the same, and inclosing an obligation to be signed and returned, with £6 6s. for the admission fee. The yearly contribution is £4. 4s. payable on the first of May, unless the person chooses to compound for all annual payments by paying down £42. Fellows may be present and vote at all general meetings. They can introduce visitors at the ordinary general meetings of the society. They have personal access to the Library, and other public rooms of the society, and can consult the printed books, plates and drawings belonging to the Institution. They have personal admission themselves, and can introduce, personally or by order, visitors to the Garden of the Society. They receive, gratis, a copy of the Transactions of the Society, published during the time they continue to be Fellows, and they can purchase the previous Transactions at reduced prices, besides being allowed to participate in the Society's distribution of seeds, cuttings, and plants.

Practical Gardeners admitted as Fellows, pay only one guinea for admission, instead of £6. 6s. and one guinea annual subscription instead of £4. 4s. Corresponding Members are furnished with a diploma, after being balloted, which will entitle them, without fee and subscription, to be present at general meetings, and to have personal admission to the garden, but it ensures them no other rights or privileges.

WHAT WILL KILL WORMS INFESTING A LAWN?—I should feel obliged by your informing me what will kill worms infesting a Lawn. I have been told that American Potash dissolved in water will suffice, but am not aware of the requisite proportions.

C. T. T.

ANSWER.—We never saw American Potash used for the purpose stated, and independent of the expense, which would be considerable, we almost doubt whether a solution of it would answer the end, except it were very powerful. We

can confidently recommend lime-water, having tried and found it to answer perfectly. Take about a bushel of good quick or unslacked lime, put it in a large tub, and add about twenty gallons of soft or river water. Then let it be well stirred up once or twice a day, for two or three days. After the liquor is cleared, pour it on the grass with a rose watering-pot, very early in the morning, before the sun shines upon it, for the worms are then generally at the top of the ground. Repeat this for three or four days, and they will totally disappear.—

CONDUCTOR.

APPLE AND PEACH TREES are better when grafted and budded than when raised from seed, providing proper stocks are selected.

THE MANCHESTER CELERY is to be obtained at all the seed shops in this part of the country, at Dickson's, of Chester; Skirving's, of Liverpool; and Wilson's, of Derby; &c. &c.

LIGHT AND AIR should be excluded from the *Apple-room*, but, before they are eaten, the fruit should be exposed to both, for a few days. Beware also that they are not stowed in damp cellars.

WALNUTS are best preserved in jars, covered with dry sand or saw-dust, but they must not be placed in a damp cellar. Dry wood-ashes are also an excellent preservative for all kinds of seeds; but walnuts, if preserved in this material would require much brushing to get them clean, when wanted for use.

Heath House, March 10th, 1833.

JOHN HOWDEN.

HOW SHALL I TREAT VINES IN POTS?—I have a few more difficulties respecting the culture of Vines in Pots, which I would beg through the *Horticultural Register* to lay before Mr. Stafford. I shall, perhaps, be more clear, if I state my meaning as before, in the form of questions.

1. How far from the glass do the pots in which the vines are planted stand?
2. Does Mr. S. use the syringe in early forcing, and when?
3. If a plant does not bear, does he suffer it to grow through the season and then repot it, or repot it when the shoots have fully developed themselves to the fifth or sixth bud.
4. What is the average temperature of his house, Max. and Min.
5. I am at a loss as to the quantity of water. Mr. S. gives water (see Vol. 1, page 1 and 2) twice a day, whereas I can only water once a week, sometimes less. How is this accounted for? My house is heated by fire and hot water, and is on an average 65 by day and 58 by night.
6. I had a few plants last year purchased for the purpose, which I introduced and treated as directed, Vol. 1, page 1 and 2, and succeeded in obtaining one or two bunches on a plant, but this year the vines showed no fruit, and bore evident marks of exhaustion. Is this a common case in pot culture? How many seasons in succession, on an average, may we expect vines to bear the abundant crops Mr. Stafford speaks of?

7. Will Mr. S. be so good as to state the component parts of his soil?

8. Some of my plants have this year shown fruit, but they appear to make no progress. In some instances, the bunches when formed do not expand their flowers, but wither and die off. Is this a complaint of the season, or from what cause is it supposed to arise?

Thanking Mr. Stafford for his obliging answers to my former questions, and the Editor of the *Horticultural Register* for his no less obliging insertion of them.

VIGORNIENSIS.

PLANTS FIGURED IN THE TITLE PAGE, UNNAMED.—You have hitherto most unaccountably omitted to give the names of the plants figured in the Frontispiece of the first Volume of your *Register*, and I have in vain examined the numbers of this year in expectation of this defect being remedied. I shall feel obliged, if you will give us a full explanation of the same.

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ANSWER.—It certainly was an important omission, and we feel extremely obliged when any friend reminds us of our inadvertencies. So far as they are practicable, we have great pleasure in attending to the remedies they may propose. No. 1, then is the

ONCIDIUM BIFOLIUM.—Two-leaved *Oncidium*.—An elegant stove plant, bearing flowers of a brilliant yellow, spotted with brown. It is a native of Monte Video, where it grows on trees. *Culture*.—It will not live in a pot, but thrives pretty well when tied upon a small piece of the branch of a tree, suspended by a wire in the stove. It increases occasionally by offsets.—*Bot. Cab.*

FRANCOA SONCHIFOLIA. (2) Sow-thistle leaved *Francoa*. This plant is a native of Chili, and has been lately introduced. The flowers are light purple, marked with a darker colour. *Culture*.—It is hardy and grows freely in rich loam, and may be readily propagated by seeds.—*Bot. Cab.*

SCUTELLARIA MACRANTHA.—A very pretty herbaceous plant, with bright blue flowers, rising about six inches high, and flowering in June. Native of Siberia, and lately introduced by Dr. Fischer. *Culture*.—It is perfectly hardy, and should be grown in light loam; it may be increased by dividing the roots.

DOUBLE CAMELLIAS MAY BE PROPAGATED BY CUTTINGS.—Double Camellias may be propagated by cuttings, but like the Yorkshireman's mare which had only two faults, being very shy to be caught, and good for nothing after she was caught, the Double Camellia is difficult to strike, and good for nothing after it is struck. Single flowers are natural flowers, double flowers are only monsters, and require extra care and extra nursing. An industrious step-mother or foster-mother is requisite in such cases; as in rearing a favourite calf, we are sometimes obliged to give him the milk of two cows. So to rear a favourite sheep, we put it to a more industrious ewe than its natural mother. All budding and grafting is founded on this principle, and the process of grafting is merely the striking off cuttings in wood, instead of striking them in the soil. The expense is the same, and the result affords superior flowers, and superior fruits.

A bud or graft comes sooner into flower and fruit than a cutting or seedling, and a promising seedling fruit-tree will do better cut off and grafted upon its own stock than if not grafted at all. This simple practical result throws great light on the science of Vegetable Physiology. The pith and wood being divided, they never unite again, but the sap in the graft unites with the sap in the stock, and plasters over the wound as it were, which is still visible in the oldest trees when sawn down the centre. In cutting up old apple-trees this winter, I have been able to distinguish the difference between whip, tongue, and crown-grafting, all of which are blemishes, but of no more consequence than the twigs which are cut off the stem to make the tree a standard instead of a dwarf. Thus we see a graft or cutting is ripened, or ripe for the production of flowers or fruit, but the cutting from so many fresh roots becomes in a manner changed in its nature, and is indeed a new plant. Whereas the bud or graft is merely transported to a different soil, and flourishes in proportion to the congeniality of the stock. On this point hangs all the mystery of grafting, &c. For instance, the codling on the crab, or the crab on the codling is too great a cross. J. HOWDEN.

MODE OF TAKING IMPRESSIONS OF LEAVES.—For the information of your correspondent H. C. page 90, I send you an account of taking impressions of leaves on paper. I can answer for its efficacy. Take a sheet of paper which has been previously oiled, and move it slowly over the frame of a lamp or candle until it is uniformly black all over. On this lay *flat* the leaf of which the impression is desired, with the underside downwards, cover it with a piece of clean paper, and in doing so, be careful to adjust the leaf, that it shall not be folded. Then hold the paper firm with one hand, and with the other gently rub in every direction over the leaf. Its veins will now be charged with black, lay it on whatever is intended to receive the impression, and again place clean paper over it, repeat the gentle friction, and you will have the desired fac-simile.

In reply to H. C.'s further questions, "London's Elementary details of Pictorial Map Drawing."
J. C. K.

WHERE CAN I BUY THE SKINLESS OATS?—In one of your late numbers, you speak very highly of the *Skinless Oats* lately introduced into this country, and consequently as yet very scarce. I should be obliged, if you would inform the public in your next *Register*, where they can be purchased, and at what price they may be obtained. If I can procure but one pint of them, and can have an equal, or one half of the increase that I have got this summer from three grains of wheat, I shall soon have enough to supply the parish. In the spring I found some ears of wheat growing in my garden near the wall-trees; their presence in

that situation I attribute to the straw coverings that were put over the trees in February, I took up two of the plants and divided the roots; the first gave me forty-eight plants, and the second fifty. These I planted in another part of the garden, and from No. 1, I procured one hundred and one straws, and two thousand one hundred grains of good corn, and from No. 2, I had ninety-nine straws and two thousand five hundred and ten grains of wheat; many of the ears of No. 2 were better ripened than those of No. 1. No. 3 remained in its original situation without any transplanting, and produced in due season sixty-eight shares, and one thousand nine hundred and ninety grains. Thus for three grains I have procured six thousand six hundred of as good a sample as can be seen, besides many inferior ones that I threw away, and not a few good ones that the birds took as they were getting ripe. You are at liberty to make what use you please of these few lines. I congratulate you on the improvement which your *Register* has exhibited since its first appearance. E. W. N.

TAKING IMPRESSIONS OF PLANTS WITH PRINTERS' INK.—In answer to the inquiries of your correspondent "H. C." page 90, volume 2, respecting taking impressions of leaves on paper, I beg to state a method I practised some years ago with success. I laid the leaf or the whole plant on a board, in the form in which I wished to take the impression; after flattening it down with my hand, I took two printing balls, with which I distributed a small quantity of ink, and beat it. I then placed a sheet of damped paper upon the plant, and afterwards two or three layers of flannel; a cylinder or roller was passed over the whole with some considerable force. Some skill is requisite for the accomplishment of the object, but a few trials will enable a person to do it with facility; a great number of impressions may be taken from one plant. Dr. Stokes says, "this is by far the most certain method of transmitting to posterity a knowledge of such species as have been found of the greatest importance to mankind." Several books have been published on the continent, of impressions taken from living plants. I have among my books the following works of this kind: *Flora Berolinensis*, published by the Royal School, at Berlin, 1757, folio. This work contains impressions from 300 plants with their names. 2. *Ectypa Vegetabilium usibus medicis*. This work contains 200 impressions from medical plants, and is preceded by an account of their use and culture by C. G. Ludwig, in German and Luten. Folio Leipsi, 1760. In my copy the plants are coloured. 3. I. H. Kniphofti *Botanica*, in originalli; folio, printed at Halen, 1764. This work was published in volumes, each containing impressions from 100 plants. I am in possession of the last volume only, which is the 12th, and it is coloured. I have seen another method of taking impressions of small leaves practised with much success. A smooth piece of mill-board, or of card paper, slightly oiled on one side, is held over the flame of a lamp or candle so as to be blacked, and on this surface the leaf is laid, and every part of its upper-side is rubbed with the finger, the prominent parts of the lower side of the leaf take up the smoke moistened by the oil; the leaf is then laid with the blacked side downward on a sheet of paper, and the upper surface of the leaf is again rubbed with the finger, care being taken not to press out the juice of the leaf, and that it does not slip during the operation. With a little practice, very elegant impressions of small leaves may be thus taken.

A very useful and cheap work might be published of impressions of British plants taken off in a printer's press, which, like these German works, would be of much benefit to students in Botany. I. T.

II. NATURALISTS' CALENDAR,

OR OBSERVATIONS ON NATURE, FOR JUNE.

AMONGST the many beautiful vegetable productions of this month, which may well be termed the month of flowers, the corn cockle (*Lichnis Githago* (1)) is very conspicuous in dry gravelly corn-fields. It commonly grows to the height of about three feet, and bears purple flowers, two-thirds larger than the engraved figure. The sheeps-bit *Scabious* (*Jasione montana* (2)), a small annual about a foot high, bearing a blue head nearly twice the size of the present figure, may be found in abundance in dry sandy fields, near to hedges, or on heathy ground. Upon the shady side of old walls, and on rubbish heaps, the Pellitory of the wall (*Parietaria officinalis* (3)) often flourishes. This herb was formerly much used in medicine, but is now little noticed. The expressed juice, sweetened with sugar, is a powerful diuretic. On waste and rubbishy ground, the common Dwale, or deadly nightshade, (*Atropa Belladonna* (4)), may occasionally be gathered. It grows from four to five feet high, bearing violet coloured flowers, and bright black berries, which are very tempting in appearance, but of a deadly poisonous quality. Both the berries and leaves, however, are used in medicine. The deleterious principle has been ascertained by Vauquelin to be a little nauseous matter, soluble in spirit of wine, forming an insoluble combination with tannin, and yielding ammonia when burnt.

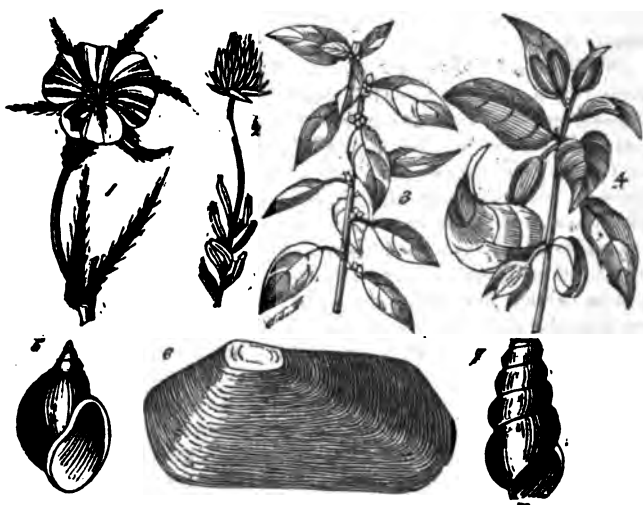
PECULIARITIES OF PLANTS.—All succulent plants such as annuals, &c. have the leaves erect. This is a wise contrivance of Providence to supply them with the additional quantity of moisture they require, beyond what the roots can furnish. On the other hand, all woody plants, such as trees and shrubs, except the willow and a few others which require much water, have their leaves pendant. This arrangement furnishes as it were so many drains, or gutters, to carry off the superfluity of moisture. And it will be found, that as the wood is more or less solid, the stem is rugged and channeled, to convey the wet to the root. The bloom, or fine dust, discovered on plums, raspberries, grapes, and some other fruits, and that on the leaves of cabbages, is evidently intended to shoot off the water, which, but for this contrivance, would enter the porous skin, and rot the fruit or plant. In the flower of the Globe Amaranthus, the parts of fructification are inclosed in a thick down like cotton wool, and the pericarp is provided with a thick and hard skin impervious to moisture. This is a curious and essential provision, since from the varnished and parchment-like character of the calyx, it would act as a cup at its base to retain the moisture, were it not absorbed by the down just mentioned. The pericarp is also further protected by a thick and impervious capsulo.—*Field Nat. Mag.*

APPEARANCE OF LEAVES EXAMINED WITH A MICROSCOPE.—The back-side of a rose-tree leaf, but especially that of a sweet briar, appears to be diapered most excellently with silver. The back side of the leaf of English mercury seems as though it were rough—cast with silver, and the ribs appear to be stuck full of round white transparent balls, like innumerable grapes or oak apples, or a bracelet of crystal with footstalks, by which they are fastened to the ribs and fibres of the leaf. A leaf of rue seems to be full of holes like an honey-comb

a sage leaf is like a white rug or shag, full of knots tasselled with white silver thrums, having one or two fine round crystal beads or pendants, as big as peas, fastened to every knot. Look at the back side of a nettle leaf, and you will see it full of needles, or rather long sharp transparent pikes, every needle having a crystal pommel, presenting the appearance of a sword-cutter's shop, full of glittering drawn swords, tucks and daggers. Of a similar appearance are the prickles of borage leaves and stalks.—*ib.*

MOLLUSCOUS ANIMALS.—Almost every little slowly running stream, where the water is clear and the bottom soft, abounds with one or more of the *Limneus pereger*. (5) The varieties of this species differ both in size and colour, but the prevailing colours are dull yellow with a bluish-black tint at the spire. Occasionally the *Mysca* (*Mya*) *Batava* (6) may be found in some of our small rivers, but is far from common. The river Kennet appears to be the most prolific place for them, particularly just above the town of Newbury, in Berkshire. The shell is about one inch long, and two inches broad, of a greenish-brown outside, and dark-blue within. The *Bulimus decollatus* (7) is about an inch long, and hardly so much wide; its colour is yellowish-white or rather inclining to brown. The top appears as though it had been violently broken off, but this is discovered not to be the effect of accident, but natural to every individual of this species. They are land animals rarely to be met with.

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BIRDS most, if not all our summer visitors, arrived early in May. Even the fly-catcher and swift are with us, whose early appearance in the north is probably owing to the very delightful weather we have experienced during the past month. The greater part of them are now breeding, many of the residents, having already reared one brood of young ones, are proceeding with a second, whilst others, as the bulfinch, &c. are but just beginning to build. From what cause does this disparity arise? Can it be, that the food with which the bulfinch and other late breeding birds feed their young does not come to maturity until late in the season?

CATCHING, TAMING, AND KEEPING NIGHTINGALES.—The net for catching nightingales is made of a semicircular hoop of iron wire, about as thick as a swan's quill, raised upon a cross stick like the common brick trap. Meal worms are fixed upon the cross stick with a pin, which when the bird pulls, the stick is deranged and the net falls. When newly caught, put Philomel in a cage, covering him with a *white* handkerchief. Throw in ten or twelve meal-worms, and a handful of the cocoons of the wood ant, (*Formica rufa*) having previously pinched their heads to prevent them from crawling away. About half a dozen meal-worms may be given every three or four hours, for a day or two, till the bird takes to the eggs. After six or eight weeks, this will not be necessary, except for a treat, or as an occasional change of food. As soon as the bird takes to feeding well, it will begin to sing, which will occur at the longest in about eight days. Allow the cage then to remain in one place, for by changing the place you will generally make the nightingale leave off singing. A handful of ants' cocoons ought to be the principal daily food, so long as he is in song, but when he has done singing, the composition called german paste may be given. It may be made in the following manner, of a much better quality than what is sold in shops.—Take four fresh eggs, boiled very hard, a quarter of a pound of white peas meal, and about a table-spoonful of good salad oil; if it be rancid it will not do. The eggs must be grated very fine, and mixed with the meal and oil. The oil must then be pressed through a tin cullender, to form it into grains like small shot, and being placed in a frying-pan, set over a gentle fire, it must be gradually stirred with a broad knife, till it be partially roasted and dried, the test of which will be its fine yellowish brown colour. All insect eating birds will learn to live upon this throughout the year. When they appear drooping, or are moulting, give them a few meal-worms, twice or thrice a day. And whilst they are in song they ought to have a dozen or more meal-worms every day, with ants' cocoons either fresh or dried.

INSECTS.—The word "*insect*" means "cut into," and hence all real insects exhibit three divisions of the body, besides several rings. Any animal, then, in which these three divisions are not found is not an insect, as for example, a spider, a woodlouse, a shrimp, or a crab, each of which has only two divisions; whilst an earthworm, a leech, a snail, or a slug is not an insect, because it has none of these divisions distinct.

SAGACITY OF THE DRAGON FLY.—(*Eshna varia*.) One day last July, a pair of these insects were sporting on the surface of a pond, when their mutual happiness was interrupted by the appearance of another male, which immediately began to chase the female. The real mate pursued his rival, and in the hostile engagement which took place, they flew at each other making repeated darts, the shining armour of the combatants, and their wings rustling like tinsel, added not a little to the interest of the scene. The contest lasted about ten minutes, when one fell into the water, apparently from exhaustion, and the conqueror having pounced upon his back, deprived him of his wings, and left him struggling without the power to rise. He again joined his mate, who was flying about without appearing to take the least interest in the affray.*—JAS. FENNELL.

SUNSHINE.—The quantity of Sunshine during March and April is as follows:

1833.	Morning.	Afternoon.	Total.	Average Daily.
March.	46 hours.	40 hours.	86 hours.	2 hours, 46 min. 27 $\frac{1}{2}$ seconds.
April.	56 hours.	67 $\frac{1}{2}$ hours.	123 $\frac{1}{2}$ hours.	4 hours, 7 min.

* Mag, Nat. Hist.

III.—MONTHLY HORTICULTURAL CALENDAR.

FOR JUNE.

The different sorts of business in the garden this month are commencing the summer dressing of wall-trees, transplanting such annuals as require it, turning the greenhouse plants out of doors, thinning, hoeing, and watering many of the principal kitchen crops, also sowing and transplanting several successional and main crops for autumn and winter.

FRUIT DEPARTMENT.

Summer Pruning.—Towards the middle of the month, Peaches, Nectarines, &c. will require all foreright and ill-placed shoots rubbing off, leaving, however, a good supply of young wood for bearing next year.

Thin Wall Fruit.—Apricots will now require looking over, and where the fruit is much crowded in large clusters, thin it out sufficiently to allow room for swelling; and towards the end of the month, Peaches and Nectarines will need a similar treatment.

Peach Houses started in December, will now be ripening their fruit daily; be careful after they begin to change colour to keep the house perfectly dry, and give plenty of air, or the flavour will be materially injured; hang nets underneath, to prevent any falling to the ground.

Cherry Houses.—The fruit in those started in January, will now be fully ripe; keep the house dry, as recommended for peaches. For the general management of cherries, see p. 266.

Vines in Pots, now brought into the vinery, will ripen their fruit the beginning of August. The fruit of those now introduced up the rafters will be ripe by the end of October.

FLOWER DEPARTMENT.

Dahlias should now be turned out of the pots in which they were planted, into the open border.

Auriculas should now be potted, if not done before.

Polyanthuses will now begin to ripen their seed; cut the pods as soon as they begin to change colour.

Ranunculuses in flower should have a little shade afforded them, when the sun is violent.

Erica Cuttings, as also cuttings of most greenhouse plants, should now be put in.

French and English Roses.—When it is desired they should flower late, may now have their shoots shortened upon Mr. Hayward's system. Vol. I, page 15.

Greenhouse Plants should now be set out of doors in a somewhat sheltered situation,

VEGETABLE DEPARTMENT.

Kidney Beans.—Sow full crops both of Dwarfs and Runners, if the weather prove dry, water the drills previous to sowing.

Peas and Beans.—Sow for successional crops as recommended last month, it would be right to soak them well in water for five or six hours before sowing.

Endive.—Sow for the first principal crops, and plant out those sown last month twelve inches apart.

Lettuce.—Thin out the seed-beds to a foot apart, and plant all sorts the same distance; also sow more seeds, and water when required.

Onions.—Those beds intended to stand for full bulbers, thin to about four inches apart.

Carrots and Parsnips intended for main crops, thin the former to about six inches, and the latter to ten inches apart.

Celery.—Plant out in trenches.

Broccoli.—Take advantage of dripping weather to plant out a moderate crop two feet and a half apart; sow a little more seed, and prick out those sown last month.

Beet Root.—Thin the red to about twelve inches apart, and the green to six inches.

Cabbages.—Prick out those sown last month, and sow a little more seed for autumn Coleworts.

Savoy.—Plant out the main crop for autumn and winter two feet apart; if the weather be dry, give them a good supply of water.

Radishes may be sown once a fortnight, both of the short top, and the white and red turnip.

Spinach.—Sow as recommended last month.

Turnips.—Sow plentiful crops of the stone top, &c. twice during the month, and hoe and thin those sown before.

Cucumbers.—Sow in the natural ground for pickling, &c.

THE HORTICULTURAL REGISTER.

JULY 1st, 1833.

PART I. ORIGINAL COMMUNICATIONS.

HORTICULTURE.—ARTICLE I.

ON THE CULTURE OF SEVERAL TROPICAL FRUITS.

BY SENEX.

As you are one of the higher rank of horticulturists, deservedly holding one of the most respectable stations in the kingdom, and moreover one of those who have pleasure, (and I hope profit,) in diffusing the knowledge of superior gardening, by the publication of a cheap and well conducted periodical, I beg leave to address you on a branch of that pleasing occupation, which your abilities and situation enable you to prosecute on a more extensive scale than most of your brethren have either the power or the opportunity. Such attempts as I am about to recommend, can only be made by those who have equal facilities with yourself for carrying any plan of the sort into execution; and I doubt not, you will as readily take a hint from a gratuitous adviser, as you will have real pleasure in the event of success.

The important results of modern gardening, as exemplified in the perfect maturation of tropical fruit, particularly the pine-apple, naturally suggest the enquiry, whether any other fine fruit of those latitudes can be brought to some degree of perfection, in the improved buildings erected for such a purpose. That such desirable fruits are

ARTICLE II.

ON THE CULTURE OF VEGETABLES.

BY HENRY BROOKE, ESQ.

CABBAGE.—The early Venack, and early Compton, may be sown in every month from the middle of February to the 5th of August, to produce heads in summer, late in autumn, and early in spring.—The large Peignton on the 5th of August, to come into use late in spring; and the Dwarf York in June and July, to produce small heads from November to the end of March. They may be sown again in September to seed early in summer. When a head has been cut, the stump, with a few young leaves, should remain in the ground, that a new head may be formed at the setting on of each leaf, for the sap, in its progress upwards to sustain the leaf, will also support the formation of the young head. Therefore, the absurd practice of cutting off the leaves and leaving the stumps bare, being a great check to vegetation, ought to be entirely abandoned. Those stumps which remain in the ground all the winter will probably produce heads earlier in the spring than the plants from seed sown between the 20th of July and the 5th of August. Some of the stumps, with their young leaves, might be removed into sheds, rooms, or other covered places, at the commencement of frost, hung up by their roots, and replanted in March. These probably will produce heads still earlier than the former. The running to seed of cabbage plants may be checked in due time, by placing a small twig through the stem of each plant to impede the sap.

Pea.—The Early Nimble, Early Warwick, and Bishop's Early Dwarf ought to be sown from November to the end of February for spring; the Blue Imperial, and Groom's New Dwarf Blue Pea, in March, April, and May, for summer; and Knight's New Dwarf Marrow from the first of June to the end of July, for late autumn produce.—Bishop's Dwarf's grow about three feet high, and as the branches extend much, the peas should be an inch apart in the drill. The branches of Groom's Dwarf extend much more, and therefore each pea ought to be three inches apart in the drill. For early peas, soot or sifted coal ashes ought to be placed in the drills, to secure them from frost; be careful not to bury the tops of the plants with earth, and be sure to stick them as soon as possible. The rows ought to be twenty feet apart, to admit sun and air to each pea, as well as to the vegetables growing between them.

Potatoes.—By planting any early sort, such as the Early Champion, or the Ash-Leaved Noble, on the 1st of January or February, and the late kind in June, *two* crops in the year may be easily obtained from the same ground. They will be better if planted whole, for the toughness of their skins, and their substance, will secure them from rotting by over damp, and from being withered by over dry ground, which frequently happens to sets. The useless eye opposite the crown must be cut out, to expedite vegetation. If, however, sets should be preferred, they ought each to have but one eye, with a great portion of the potatoe attached. The seed potatoes or sets should always be placed so far apart, that the plants, when growing, may not press upon each other, but have all their leaves fully exposed to the sun and air. Dry manure, such as sifted coal-ashes, lime, sea-weed, or any other description ought to be applied to the early and moist manure for the late planting. The earthing up of early potatoes, peas, cabbages, &c. should frequently take place, to protect the tender stems from frost; and, when the ground is dry, to prevent the stems from rotting. The earthing up of late plants in August or September ought to take place after rain, to retain the dampness in the soil, for all stems throw out fibres in pursuit of nutriment.—Clean straw should be retained as long as possible without injury, over early seed beds and early plants, but it ought to be laid aside in mild weather. After a frosty night, the icicles should be removed from the plants before the rays of the sun can dissolve them. This may be done by washing with the rose of a large watering-pot, or a garden-syringe, or by brushing them off with a box, heath, sedge, or other very light broom, or with a soft thumb rope, made of hay loosely twisted, which two men may draw along the drills or ridges. Early potatoe plants, in exposed situations, have escaped injury, when a stormy morning has succeeded a severe frosty night, the wind having dispersed the icicles before the sun could dissolve them. The water in which potatoes are boiled should never be given to a pig, or to any other animal, on account of its noxious quality, but it may be poured over seed beds, and all places frequented by slugs and other insects, for it will as effectually destroy them as either lime-water or soap suds.

Cooking Potatoes.—They ought to be all of one size, and the floury sort should be steamed or baked gradually, that the insides or cores may be reduced to powder as well as the outsides; but the soft or waxy kind ought to be cooked over a strong fire, that their noxious moisture may be quickly extracted. When vegetables and all other articles of food are prepared, all further process of cooking should instantly cease, or they will deteriorate.

Asparagus.—By the following method, the beds may be made to give two crops in the year. Towards the end of July, especially if it be rainy weather, cut down the stalks of the plants, fork up the beds and rake them. If the weather be dry, sprinkle the beds with liquid manure, and leave them rather flat instead of the usual round shape, in order that they may retain all the moisture. In ten or fifteen days, the asparagus will begin to appear. If the weather continue dry, apply the liquid manure three times a week. By this method you may cut asparagus till the end of September. Grayson's New Giant Asparagus is the best.

Garden Bean.—In procuring late beans, it has been found an excellent plan to cut down the stalks after the crop is gathered, for they soon sprout up again; and, if showery weather succeed, they yield a better supply than is obtained by late planting.

Lettuce.—Coss lettuce seeds as the Brown Coss, and dwarf Brown Bath Coss, to be sown in August, to stand the winter under frames or other protection, to come in the first of the Cosses in the spring. These and the Silesia should also be sown from March to the end of June, as well as radishes.

Celery.—The white solid, and the red solid, ought to be sown in the open ground, in April, and to be transplanted into deep and well manured drills, and earthed up in the usual way. *Late Crop*.—The seeds should be sown in the beginning of May, to stand till the end of May in the following year, without running considerably. The plants must be removed into moderate trenches, in September or October, to be earthed up a little, and, finally in February or March. Straw must be spread over them in severe weather.

Beet Root.—The Large rooted Red Beet should be sown in April, and when the plants are three or four inches high, they should be planted out a foot apart in the drills, and afterwards earthed up. In the autumn, before the frost sets in, the roots ought to be taken up on a dry day, their tops to be cut off without injuring their crowns, and then laid up in dry sand to be preserved from frost. Such roots as are not wanted for use, may be planted out in March for seed.

Potatoe Onion.—The potatoe onions ought to be planted in rich and light ground, in the last week in February, to produce bulbs which will be fit to be removed in the middle of July. They should be planted in beds of three rows, with alleys between the beds, and the bulbs a foot apart in the row. Two parts only of the old bulb should be covered with earth, and it will gradually decay, producing in the mean time many young bulbs around it. It is not only as

mild as the Spanish onion, but extremely hardy, for it will bear the severest frost. *Shallots*.—They may be planted in beds, at the same time as the potatoe onion, only closer together.

Onion.—The white Spanish, James' long keeping, and the Silver Skin, ought to be sown in March, and the Tripoli in August, in beds three feet six inches wide, with alleys between them. Soot, or finely powdered lime, should be scattered over seed beds, to keep away all insects; but this must not be done after the plants make their appearance, for soot would burn them. Nets with small meshes ought to be supported above them, to keep off insects and birds.—*Tripoli Onion*.—An excellent kind for autumn sowing. This and the Prize-Fighter Cucumber, new Gigantic White Celery, and the Russian Broccolis ought to be cultivated.

Buda Kale.—It is the best of the Brussels sprouts tribe, and ought to be sown early in August and September, to produce excellent greens in February, March, and April.

Trus Seed.—The stem about to flower must be supported by a stake, which should be besmeared with some offensive ointment, such as sulphur, turpentine, train-oil, &c. This will effectually keep away bees. After seeds are sown, earth taken from the alleys ought to be sifted over the bed, and patted down lightly upon it with the back of the spade.

All digging should be done in dry weather, that the earth may be pulverized, for if done in wet weather, the earth will be clotted, and roots cannot easily penetrate it. No vegetables ought to be sown or planted in the same ground more than two years in succession, for they will deteriorate, unless the ground be trenched every year to bring up a fresh surface.

TRAP TO CATCH SLUGS.—Near their haunts may be placed large turnips cut in halves, and hollowed out, leaving substance for food and warmth, and having two or three notches cut in their brims, within which the slugs will enter and be destroyed. *Another Mode*.—Hold some cabbage leaves over the fire till they become quite soft, then rub them with unsalted butter, or any kind of fresh dripping, and lay them in the places infested with slugs. In a few hours the leaves will be covered with snails and slugs.

It is said, that if the largest pip in an apple be sown, the fruit will be similar to that of the parent tree without grafting; and that the cabbage seed gathered from the middle flower stem produces plants which will be fit for use a fortnight earlier than those from the seed of the lateral flower stems. Cucumber seeds may be sown early in June and July in the open ground.

HENRY BROOKE.

ARTICLE III.

ON THE PROTECTION OF WALL FRUIT-TREES, BY NETS OR MATS.

By the Author of the Domestic Gardeners' Manual.

C. M. H. S.

MY motive for requesting the insertion of the following remarks is, to promote enquiry among the more observant and reflecting part of your readers, and to request those whose experience has enabled them to arrive at a knowledge of facts connected with the present subject, to state what the results of that experience may be.

Mr. Charles Harrison, the author of the *Treatise upon Fruit-trees*, has strenuously recommended woollen nets, as a most efficient protector of the bloom of wall trees against the effects of spring frosts. I became a sincere convert to his opinions, and, just at the period when I was deeply engaged in writing an important part of the *Gardeners' Manual*, I caused several woollen nets to be made, with a view to prove the value of that species of covering upon my own peach-trees. My reflections then led me to the following conclusion, upon the manner in which security was effected by nets. Mr. Harrison stated, that "this netting completely preserves the bloom, as the *frieze* which is upon it *receives the hoar-frost*, and as it dissolves in the morning, a suitable portion of light and air is afforded to the trees; it also repels the force of winds, and is an effectual protection." In my section upon *Heat*, and in that part of it which refers to the phenomenon of *Dew*, I observed that "the agency of" (electric) "induction" will discover the cause of the protection afforded to vegetables and fruit-trees, by a covering placed above them. The stamens and pointals of blossoms are, in fact, so *many pointed conductors* of electricity, their office being to convey the fructifying juices destined to mature the seeds and fruit. In consequence of their form, they are equally liable to become *dewed* as grass is. If then, the air be frosty, the particles of water and the juices in their fine vessels become frozen, and ice being a bad conductor of electricity, the vital currents are arrested, and the delicate organs of fructification materially injured, or destroyed. But if an awning weather-boarding, or even a woollen-net be placed at some distance above the blossom, the point of contact will be transferred from the vital organs of the seed to the two surfaces of the covering, consequently the regular flow of the ascending current, even to the extreme point of the vessels, being secured, the juices of the flower will

be duly distributed, and the process of maturation proceed without impediment."

I am by no means shaken in my opinion, nor do I see any reason for doubting the manner in which a covering may serve as a protector from the paralysing effects of frost, acting upon the organs of impregnation; but I have nevertheless been led to suspect the fact of any general benefit being, upon the whole, derived from a covering of mats or nets. In plainer terms, I have witnessed certain results, which lead me to conjecture that, in most cases, trees *unprotected* will set their fruit better, and will preserve their foliage in a more healthy condition than others which are carefully covered during the whole blossoming season, by intermedia which extend from the top of the wall to the very surface of the soil. These facts I shall now state, and I earnestly solicit the attention and kindly remarks of your experienced practical readers.

In the spring of the year 1830, I caused two fine peach-trees, on a low wall, facing south-east, to be covered entirely with woollen nets; but not so as to suffer any twig or blossom of the trees to touch any part of the nets, unless it might be just at the extreme tops. The nets were fastened against the coping, and brought down at an angle of about sixty degrees. No frost (though the spring was very ungenial,) appeared to reach or affect the young foliage or the bloom; yet, I believe, not half a dozen of the peaches set upon the two trees. The sun's rays and the air passed freely, and the nets were never removed. When I came to my present property, I was applied to by an immediate neighbour, and lent him a large net. My son fixed it to the wall in the way above described: it was retained during the whole blossoming period, but not one fruit set *under the net*, whereas, upon two or three branches which *extended beyond it, there was fruit*. The same gentleman had string nets placed before several of his trees during the present spring, not, however, at an angle with, but perpendicularly to the wall; and therefore in close contact with the breast-wood of the trees. Two evenings since, he requested me to inspect them, when I observed no fruit, but found that much injury had been produced by some means. Several large branches of the peaches, nectarines, and apricots, had been all but killed; the leaves were dried up, and I suspect that many will not recover. Other trees that had not been netted appeared in a far more healthy condition, though none carried much fruit. The nights throughout April have been extremely severe; and hoar-frost occurred, I think, above twenty times during that and the preceding month. The trees, moreover, had been suffered to re-

tain too much fruit in 1832, and the paucity of fruit may perhaps be thus accounted for. Still, however, it is undeniably the fact, that the netted trees have much deteriorated.

I am not willing to deny the protecting power of nets; nor am I at a loss to conjecture the way in which they act as preservers; but I am by no means convinced that any good whatever is derived from keeping the trees covered night and day. Is it not probable, that the direct uninterrupted influence of light, air, and dew, must be of general and essential service? Could a net or mat indeed, be placed over a tree during a very acute frost, and be removed subsequently as soon as possible, the good conferred might be unalloyed; but to interpose a permanent screen between the tree, the body acted upon and its great natural agents and exciters appears altogether a different affair! The facts I have observed, have led me to reflect; and merely to elicit other facts, bearing upon the question, from practical men, is the direct object of this communication.

G. I. T.

May 25th, 1833.

ARTICLE IV.

REMARKS ON MR. SEYMOUR'S SYSTEM OF TRAINING PEACH AND NECTARINE TREES.

BY MR. JAMES BROWN, JUN.

ALTHOUGH so much has been written upon the training and pruning of wall trees, especially the peach-tree, I hope I may be permitted to offer a few remarks to your numerous readers, and that some of them will stand forward in defence of the old tottering fabric, the fan system, as it is denominated by Mr. Dyson.

In reply to that gentleman, I will endeavour to shew what difference there is in accomplishing the desired end, or whether any disadvantages arise from the old system more than the new one. I am not about to condemn Mr. Seymour's mode of training, on the contrary, great credit is due to him for the skill he has displayed in his training. But the pages of the *Register* are open for free discussion on every thing relating to Horticulture, without partiality, and I sincerely hope, without any personal sarcasms on either side.

The greatest objection to Mr. Seymour's method, in my opinion, is that it is not capable of being brought to that perfection its admirers advocate. I presume that it is liable to as many imperfections

as the old method, and it is not so easily renovated. Mr. Harrison's objections were conclusive with regard to the origin of the young shoots from the same source, for it is impossible they can be produced from the same identical point without forming rugged protuberances; and to avoid these protuberances, the source of the young shoots must consequently become spurs on the parent branch. Mr. Dyson recommends tying the young shoots with some matting to the parent branch, or partly breaking them, to make them break at the same place the following season, which in time would tend much to form protuberances by forming callosities. Young trees no doubt may be freer from them than old ones, viz.: such a one as Mr. Dyson figured in the *Register* for April, but how will that tree appear in six more years? It is much easier to draw trees on paper than to train them to the walls. Mr. Dyson must have been most fortunate in his practice, if he can say, "that he never yet met one solitary instance of dead wood occurring in any material degree."

It will be needless to remark further on training by the old method, for it is universally known, any more than to support my argument. It is true, that, if neglected, the trees are soon lost on this system, and so they would be on Mr. Seymour's system. I am also aware, that wall trees are much neglected throughout the country, but where does the evil often lay? We know that in gardens where there is not a sufficient number of hands kept, we invariably find bad wall trees. It is well known that the trees want much attention in spring, the busiest time of the year, and then the gardener has an endless variety of work to be done which cannot be dispensed with, and consequently is often, though reluctantly, obliged to neglect his wall trees, instead of repeatedly syringing them with a solution of sulphur and water, as recommended by Mr. Stafford for hot-houses. This ought to be entered upon when the trees push forth their leaves, but the engine might freely be used through the summer. Hence for the want of these needful operations in the spring and summer, the trees have their first young shoots infested with insects, and also the late or summer shoots. The wood seldom ripens, especially in a cold wet season, and consequently the trees are ruined. Then the gardener is blamed for his inattention or want of skill in their management.

Now on the old system, the principal object is, to lay the leading branches in their proper places at the first onset, which is in fact laying the foundation of the tree. Afterwards there is no difficulty in filling the tree each successive year, more than selecting proper shoots, and in pruning and training them strait and at proper dis-

tances. By proceeding in this way, I cannot conceive where the heterogeneous mass of unnecessary wood, of which Mr. Dyson complains, is to be found, or why the young shoots should rob the fruit of its proper nourishment more than on Mr. Seymour's system. The old system, if properly attended to, is calculated to produce better bearing wood, for the strongest shoots are not most productive, neither do the very weak bear the finest fruit. By the new system, when the trees are old the young wood is weak. Again, Mr. Harrison, in his observations, says, that for the lateral shoots which die, a substitute can not readily be obtained. But is not the parent branch of the laterals apt to die the same as in the old system? If so, the tree is completely deformed, but on the fan system it is easily replaced. Taking into consideration the difficulty attending the new system throughout its progress, and remembering that the same end is accomplished in the old system, and moreover that the duration of the trees is secured, the old system is the preferable of the two.—If Mr. Dyson should ever witness the wall trees in Lord Southampton's garden, at Whittlebury Lodge, Northamptonshire, trained by Mr. Oxley, the gardener, on the old system, he will be as much struck as others are with the new system, especially if he look at some Morella Cherries, which are, I think, the finest trees of their kind in the country.

JAMES BROWN, JUN.

Stowe Gardens, April 13th, 1833.

FLORICULTURE.

ARTICLE V.—ON THE CULTURE OF THE IRIS BICOLOR.

BY MR. PLANT, CHEADLE, STAFFORDSHIRE.

BEING anxious to assist in spreading information, I am induced to trouble you with a few remarks on the culture of the *Iris bicolor*. I have been repeatedly asked how I manage my plants; even during this spring three eminent amateurs have enquired concerning the treatment of this and other plants. Not having time to answer every separate question of this sort, I take this opportunity of stating how your readers may certainly succeed as respects this singular and beautiful species of *Iris*, (*Hermodactylus*), introduced to our gardens so long ago as the year 1597. I do this the more readily because it deserves a place in every garden where a choice collection

of plants is kept; and besides, it forms a necessary link in the large and beautiful family of Iridæ. But first as to the identity of the species; and on this point it may be remarked, that in "Sweet's British Flower Garden," Vol. 5. page 146, there is the figure of a species of snake's head; yet that is not the plant in question. On the contrary, I believe the *Iris bicolor* to be identical with the *Iris tuberosa* in the Bot. Mag. page 531, though the figure of it there given is very poor. I got the plant from Pontefract eleven years ago, and this is the fifth intervening season it has bloomed under my care. I have about one hundred roots, and forty of them are now blooming. The soil consists of two parts of turfy peat, one of white sand, and one of completely rotted stable manure, all rubbed well together. It is not sifted, but a little of the finest is placed about the tubers when planted. They should be planted six inches deep, and there should be placed below the tubers a compost to the depth of at least nine inches. The plant is hardy, and should be placed in an open situation; it will require no protection except when in bloom, the flowers being often destroyed by spring frosts. I had twenty blossoms completely cut off in the year 1831. The best, and indeed the only time to remove the roots with safety, is when they are in a quiescent state. The foliage will be dying down from about the end of May to the middle of June, when they should be taken up, and kept in sand, in a moderately dry place, for about a month, and afterwards planted in compost as above mentioned.—If the plants be in pots, they may of course, be removed any time, but I have found that the species cannot be kept in health long together in pots. Care should be taken not to break off the digitals of the root, in taking up and planting, for if that happen, the root will certainly not bloom. Something of this sort occurs, when the roots are left undisturbed the whole summer; for being fleshy, the worms and various insects are attracted to them, which gnaw and separate the digitals, if they do not destroy the roots. But there would be no chance of the plant living for a long time in a cool adhesive soil where worms, &c. would not be likely to abound. If you do not think me troublesome, I may write to you again on some subject.

J. PLANT.

Cheadle, May 1st, 1833.

ARTICLE VI.

CULTURE OF BIENNIALS, WITH A SELECTION OF CHOICE
GREENHOUSE BIENNIALS AND PERENNIALS.

BY JOSEPH FAXTON, F. L. S. H. S.

BIENNIAL flowers are divided into four sorts, viz.: hard, frame, greenhouse, and stove plants. Their lives generally terminate at the end of the second year, when allowed to flower and seed, but most, if not all of them will live for three or even four years, if the flowers be nipped off as soon as they appear, and the plants be preserved from injury. The *hardy* species, as *Erythræa aggregata*, *Hedysarum coronarium*, *Centrocârpha trilôba*, *Eutoca multiflora*, &c. of which we made a selection in page 116, may be either sown in the open borders, or in some compartment set apart for the purpose. They will thrive best in a light sandy soil, or with a portion of peat mixed with it; yet the *Eutoca multiflora*, *Hedysarum coronarium*, *Centrocârpha triloba*, *Echium violaceum*, &c. will succeed in any common soil. The season for sowing the seed depends in some measure upon the time the plants ripen it. Those plants which flower early, and ripen their seed by August, as *Eutoca multiflora*, *E. Franklini*, and *Erythræa aggregata*, should be sown as early as convenient after being gathered; whilst those which do not ripen till September or October, as *Hedysarum coronarium*, *Dianthus chinensis*, &c. must not be sown till the following May. Sow them thinly in shallow drills, and cover the seeds with soil broken fine. When two or three inches high, transplant them into other beds, and when grown a good size, take them up with balls, and place them in their final destination. Some sorts grow with large tap roots, and from the great care requisite in removing these without injury, it is advisable to transplant them from the seed bed into small pots, and afterwards to turn them out with the balls entire.

Treatment of the Frame Biennials.—Although this division of biennials, including *Ipomopsis elegans*, *Salpiglossis Barclayana*, *S. atropurpurea*, *Verbena pulchella*, &c. are not so hardy as the last, they will do well in the borders, during summer. They require to be raised on a slight hot-bed, in the same manner as half-hardy annuals, page 111. The soil in which they are sown must be light and sandy, and the best time to sow them is the beginning of April. At the end of May, transplant them either into the open borders or pots, and it is always well to have a quantity of the latter, for should

the summer prove wet, the *Ipomopsis elegans*, *Salpiglossis Barclayana*, and several others of delicate texture, are liable to perish. It is not unusual for the varieties of *Salpiglossis*, &c. to flower the same year they are sown, but they flower much finer when preserved till the following spring, by picking off the flower-buds as they appear. During winter, the roots will require protection from the frost, either by means of a flower-pot filled with litter, or by potting them and setting them in a pit or frame. In all other respects, their treatment resembles hardy biennials.

Greenhouse Biennials.---These may either be sown on a hot-bed, as recommended in the last case, or be sown in pots in the same manner as tender annuals, page 112. Indeed their general treatment may be the same as tender annuals. They will require potting in a mixture of sandy loam, peat, and leaf-mould. Although naturally biennial, many of these plants may be perpetuated for a number of years, by constantly raising them from cuttings, as in the *Anagallis latifolia*, and other species, which root immediately when planted under a hand-glass. Others may be propagated by a division of the root, as *Arctotis argentea*, *Aneiléma nudiflora*, &c. Others, such as *Anchusa capensis*, *Húmea elegans*, *Cynoglossum pictum*, *Manulea cheiranthus*, &c. &c. can only be propagated by seeds, which will in general ripen pretty freely.

Stove Biennials.---These require similar treatment to stove annuals, (page 113,) until they arrive at maturity. They may then be mixed amongst the other stove plants, and either be plunged in bark or otherwise, as may be found necessary.

CHOICE SELECTION OF GREENHOUSE BIENNIALS.

BLUE.	high.	PURPLE.	high.
<i>Aneiléma nudiflora</i>	6 inches	<i>Anagallis latifolia</i>	1 foot
<i>Anchusa capensis</i> ,	1 foot.	ORANGE.	
<i>Cynoglossum pictum</i> , ...	1 foot.	* <i>Manulea cheiranthus</i> ...	1 foot
SCARLET.	high.	* <i>Arctotis argentea</i>	1 foot
* <i>Húmea elegans</i>	6 feet.	* ——— <i>fatúosa</i>	2 feet

CHOICE SELECTION OF GREENHOUSE PERENNIALS.

SCARLET.	high.	WHITE.	high.
<i>Lobelia Tupa</i>	8 feet	<i>Calostemma álbum</i>	1 foot
<i>Cobúrghia incarnáta</i>		<i>Oxális pulchélla</i>	9 in.
YELLOW.		BLUE.	
<i>Goodénia grácilis</i>	1½ feet	<i>Lachenália mutábilis</i>	6 in.
<i>Helichr'ysum herbáceum</i> . 1½ feet		<i>Cummíngia campanuláta</i> , 9 in.	

PURPLE.		high.	VARIEGATED FLOWERED.	
Thysanòtus tuberòsus ...	1 foot			high.
Pelargònium asarifòlium	6 in.		Calceolària Gelliàna	4 feet
— dipétalum ...	6 in.		— Yóungii	2 feet
Calopògon pulchéllus			— — áltra	2 feet
PINK AND RED.			Gladiólus psittacinus.....	4 feet
Pogònia ophioglossòides.			Clivea nóbilis.....	14 in.
Alströmèria pállida.				
— psittacina.				

Those marked with an asterisk are considered the most beautiful. We shall next endeavour to select a few of the handsomest Stove Biennials and Perennials, and supply a few hints on the culture of Perennials in general.

JOSEPH PAXTON.

Chatsworth, June 4th, 1833.

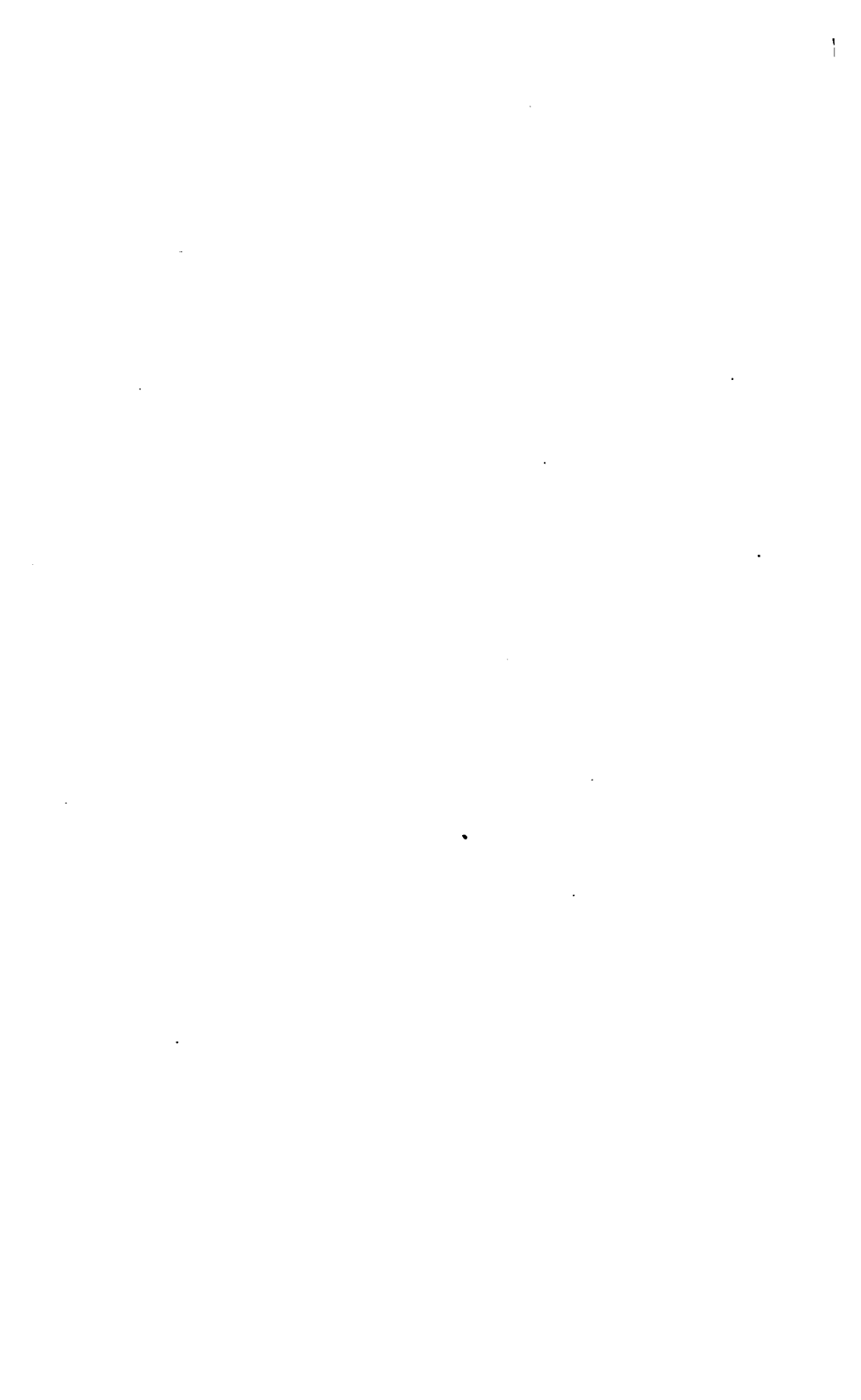
ARTICLE VII.

ON THE CULTURE OF THE POLYANTHUS.

BY M. S.

I KEEP all my polyanthuses in pots plunged in the ground, by which plan I can at any time remove them, should they be infested with slugs or any vermin. I divide and fresh pot them after the flowering season; as soon as the offsets shew a few new leaves in the heart, I crop off all the old leaves and put each plant in a pot six inches diameter inside, and plunge them in a cool shady place during summer, where the sun never shines on them, and in winter under a warm wall or hedge facing the south; in very intense frost, I throw a mat over them. When the flowers expand, I put them on a stage with a pan under each pot, which I frequently fill with water; some I allow to go to seed and sow the seed as soon as ripe, which soon comes up, and if transplanted in saucers a dozen or two in each, and kept in a cool frame or the greenhouse during winter, pot them in February in small pots, and in May plunge them in the ground, and most of them will flower in the autumn. I have raised some good seedlings this way. The soil I use is a rich loam.

M. S.





GLADIOLUS PUDIBUNDUS. (Fig. 37.)

ARTICLE VIII.

DESCRIPTION OF GLADIOLUS PUDIBUNDUS, OR THE
BLUSH-FLOWERED CORN-FLAG,

With some Remarks on the Culture of the different Species of Gladiolus.

THE *G. pudibundus* (Fig. 37) is a hybrid offspring, supposed to be between *G. cardinalis* and *G. blandus*, and was raised by the Hon. and Rev. William Herbert. It is an extremely showy plant, and cannot fail to become an universal favourite with florists. Its flowers are large, usually about ten in number, of a brilliant rose-colour. The three lower segments are marked with a pale whitish-yellow spot, having a deep red edge, and the anthers are purple.—*Sweet's Fl. Gard.*

Culture of the Genus.—All the species thrive best when planted in a mixture of very sandy loam, and decayed leaves or peat soil. Like all other bulbs of a similar habit, they must be kept perfectly free from water during the time they remain dormant. About the end of September, or beginning of October, the bulbs should be taken out of the pots and replanted in fresh soil. They may then be set in a cool frame, and merely sheltered from frosts, till they have pretty well filled the pots with young roots. Afterwards they should be removed to the greenhouse or other warm situation, to flower. Most of the species will succeed, if planted in a border composed of light soil, close under a south wall, especially under the wall of a stove or greenhouse. It is, however, necessary to plant them six inches or more deep, that no ordinary frost can injure them; and, during severe weather, they should be covered with a little dry litter or other materials. They appear to flower the strongest, when planted in a pit where they can be covered with lights and mats in frosty weather, and exposed to the air in fine and mild weather. They can also, in such a situation, be readily protected from heavy rains, by placing on the glasses. This effectually prevents the rotting of the bulbs, which is often the case when planted out of doors. Occasionally they ripen seeds, by which they may be propagated, but chiefly they are increased by offsets from the bulbs. The roots of *G. edulis* are roasted and eaten like chestnuts, which they much resemble both in taste and quality.

ARBORICULTURE.

ARTICLE IX.—ON PLANTING FOREST TREES, &c.

Extracted from an Old Work on the Subject, by Moses Cook.

COMMUNICATED BY MR. THOS. DEE.

I OBSERVED, some time since, in your excellent *Register*, that you were ready to receive extracts from old and new curious books on gardening, &c. and having lately met with a book written by Moses Cook, gardener to the Earl of Essex, at Cashioberry, on Raising Forest Trees, second edition, 1717, which contains several curious facts, I send you a few, which, if too long for one number, you can insert in two or more.

A WYCH ELM in Sir Wm. Baggott's Park, in the county of Staffordshire, as Sir Henry Capell told me, employed two men five days to fell it. It lay forty yards in length, the stool was five yards two feet across, fourteen loads of wood brake in the fall, forty-eight loads in the top, eighty pair of naves were made of it, besides eight thousand six hundred and sixty feet of boards and planks. It cost £10. 17s. in sawing, and the whole was conceived to weigh ninety-nine tons. It was felled in 1674.—P. 14. *Preface.*

SALT AS A MANURE.—I well remember, when I was a boy, about fourteen years of age, the sea broke into my father's marsh, in Lincolnshire, and it was overflowed with salt-water. The next summer being dry, all our grass was burnt up, so that I was very much concerned, thinking all our grass was clear killed, indeed so it appeared. The next summer proved wet, so that towards the latter end we had some grass again, and during the third summer we had grass enough, and in the fourth and many others there was an abundance. I would have those who lay salt in their gravel walks to kill the weeds, to observe it, in a few years they do not produce more weeds than others that had no salt laid on them at all.—p. 26.

PLANTING LIME-TREES, AT CASHIOBERRY.—The following account of the lime-trees, at Cashioberry Park, ought to be preserved, for I think there is hardly another account of the kind to be found.—C. 8. p. 30.

The smaller your plants and the finer you must make the earth by screening, sifting, beating, turning, &c. I know this to be true from good success, for the Right Honourable my Lord (and the more to be honoured, because a great planter and as great a lover

thereof,) gave me orders to make three walks of lime-trees, from the new garden to the new bowling-green, and withal to make them descend towards the house as near as we could. Having first levelled the hill, I staked out my ground where every tree should stand, and then ordered the holes to be made for the trees, each hole being three feet and four feet wide, because the ground was so bad. This I did a year before I set my trees; and, having the convenience of *brick* earth near, I got a load to every hole and mixed it with the earth digged out of the hills, turning it over twice, in dry weather, throwing out the great stones. I did throw the turf into each hole (the grass side down) as soon as they were made; but the hill of gravel I trenched with loam, cow-dung, and the litter under the cow racks, two feet deep, and five feet on each side of every row of trees. Having thus prepared my ground, and the season of the year being come; about the beginning of November 1672, I had the trees taken up with good help, as carefully as I could, and carried to Cashio-berry, the place of their present abode. Then having good store of help and good mould, prepared of the smallest and finest, I set the trees with the upper part of the roots of each tree level with the top of the ground, making a round hill, half a foot high, about every tree, the compass of the hole. Having pruned the head of each tree, and the ends of such roots as were broken, I sorted the trees, and observed this method in placing them, namely, I set the highest next the bowling-green, and so shorter and shorter till the lowest were near the garden, which I did for these reasons, viz.: the green was the worst ground, and the trees were in danger of being spoiled by a market path that goeth across that end of the walk to Watford. Having thus set my trees straight in the rows, and trod the earth close to their roots, and made my hills, I then laid round every tree upon those hills wet litter, taken off the dunghill, two good barrowsful for every tree, and covered that with a little mould, leaving them to take their rest for a time. Early in the spring, I found them begin to progress, and that summer they had such heads shot forth that I was forced to cut off some of these, (that is, side boughs) to prevent the wind from breaking them. There are in these four rows of trees 296, and of these I lost not one tree the first season."

It would be very curious and interesting to every lover of planting to have a full account of the present state of these trees, the age of which is thus nicely ascertained to be 160 years. Should any of them be cut down the number of rings ought to be well examined. Pray bear this in mind, and try to persuade the gardener at Cashio-berry, to send you some particulars about them.

In page 190, we find that in 1672 there were also three rows of spruce firs planted, "being set circular and triangular" round the bowling-green, and it is probable from the context of the book, that much (if not all) of the ornamental planting at Cashioberry was done at this time. He recommends the sycamore as a plant which deer will not soon harm, but he says the hornbeam is the best of all trees for that purpose, for a deer will starve before he will so much as taste the bark of the hornbeam. Deer do not much love the very small tops.---p. 101.

Many more curious passages (shewing that there is little or nothing new in the most approved modern practices) might be quoted, in respect to pruning, laying, and transplanting large trees, &c. &c. and if you approve of these already extracted, I may send you more at another opportunity.

THOMAS DEE.

ARTICLE X.

THE ADVANTAGES OF ANNUALLY PRUNING FOREST TREES.

BY MR. J. HUGHES.

To illustrate the advantages of *early* and *annual pruning*, I have transmitted for your *Register* an account of the trees planted in the parish of Llanarmon, in the winter of 1804 and 1805, and measured November, 1832, one foot from the ground.

<i>Height of the Trees when planted in 1805.</i>		<i>Circumference of the same Trees in 1832, that is, the average girth from one Foot high to</i>	
	<i>Feet. In.</i>		
Oak.....	2 11	15 Feet...Oak.....	21 Inches
Sycamore	3 8	18 do. ...Ash.....	26 do.
Beech.....	3 9	10 do. ...Beech	27 do.
Elm.....	3 10	15 do. ...Sycamore..	30 do.
Ash.....	3 11	12 do. ...Elm.....	32 do.
Italian Poplar.....	4 2	20 do. ...Larch.....	39 do.
Larch.....	4 8	14 do. ...Scotch Fir.	44 do.
		20 do. ...Italian Pop.	44 do.

J. HUGHES.

NATURAL HISTORY.

ARTICLE XI.—PECULIARITIES OF PLANTS,

With some observations on those which possess, or are supposed to possess the power to entrap Insects.

BY JOSEPH PAXTON, F. L. S. H. S.

THE extraordinary irritability of certain plants forms a very striking feature in the vegetable world, and the peculiarity of shape in others so nearly approaches the lowest link in the animal world, that it is not easy to define the difference between the one and the other. If, as is supposed, plants be really endued with sensation, and possess a nervous system, this difficulty is greatly augmented. And the existence of either sensation or instinct, or of something very analagous seems to have been partially proved. Vegetable poisons, such as Belladonna, Nux Vomica, &c. which destroy animal life, by acting only on the nervous system, cause the leaves, when applied to plants, to shrink or curl up, which after appearing considerably agitated, become flaccid, and the plant dies in a few hours. The sensitive plant and some others, close their leaves, and shrink back on the slightest touch, as though they apprehended danger. If two or three drops of prussic acid be poured upon the plant, the leaflets close, become agitated, flag, and do not regain their usual habit for upwards of eight hours. These poisons are known to be incapable of injuring the animal frame, except through the medium of the nerves, and this fact favours the supposition, that certain organs exist in plants which are analagous to the nervous system in animals, and on which these poisons act. Indeed Dutrochet has observed in the walls of the cellular and fibrous tissue, small semi-transparent globular and linear bodies, which he considers to be the elements of a diffused nervous system, and he ascribes the movements of plants to their action. These latter discoveries consequently neutralize many, if not all the former definitions of plants. One of the ancient botanists defined a plant to be an animal fixed by means of a root. Jungius, who lived about the beginning of the 17th century, defined it to be a body possessing vitality, but without sensation, and fixed to a certain spot from which it derived the nourishment necessary to the development of its parts, and the reproduction of its species. Linnaeus, in fixing the boundaries of the mineral, vegetable, and animal kingdom, said, "stones grow; plants grow and live; animals grow, live, and feel." M. Bonnet, of Geneva, defined a plant to be an organized

body, nourished by means of roots placed *externally*, an animal being an organized body nourished by means of roots (lacteals) placed internally. Hedwig considered that the reproductive organs of a plant, after having discharged their peculiar functions, uniformly decay and drop off, before the fruit has reached maturity, while those of the animal remain permanent, and perish only with the individual itself. M. Mirbel has latterly introduced a criterion, founded on the character of the substances on which plants and animals feed. Plants feed upon unorganized substances, as earths, salts, water, or gases. Animals feed upon substances already organized, as vegetables, animals, or their products; but never wholly upon substances in an unorganized state. From this last definition, Mr. Keith deduces that a vegetable is an organized and living substance, springing from a seed or gem, which it again produces, and effecting the development of its parts by means of the intro-susception and assimilation of unorganized substances, which it derives from the atmosphere, or from the soil in which it grows. An animal is an organized and living being, proceeding from an egg or embryo, which it again produces, and effecting the development of its parts by means of the intro-susception of organized substances, or their products.

Amongst those plants which possess peculiar irritability, or remarkable appendages, none appear more interesting than the *Dionææ*, *Nepenthes*, *Sarracenia*, and others, which have the power of entrapping insects. Plants having this property may be divided into three sections, 1st. Those which have hollow vessels or appendages attached to either their leaves or branches containing a liquid, into which the insect having entered is unable to return, as in *Sarracenia*, *Nepenthes*, *Cephalotus*, &c. 2nd. Those which entrap by their irritability, as *Dionææ*, &c. and 3rd. Such as entrap by the viscosity of their stems, &c. as *Robinia*, *Silene*, and many others.

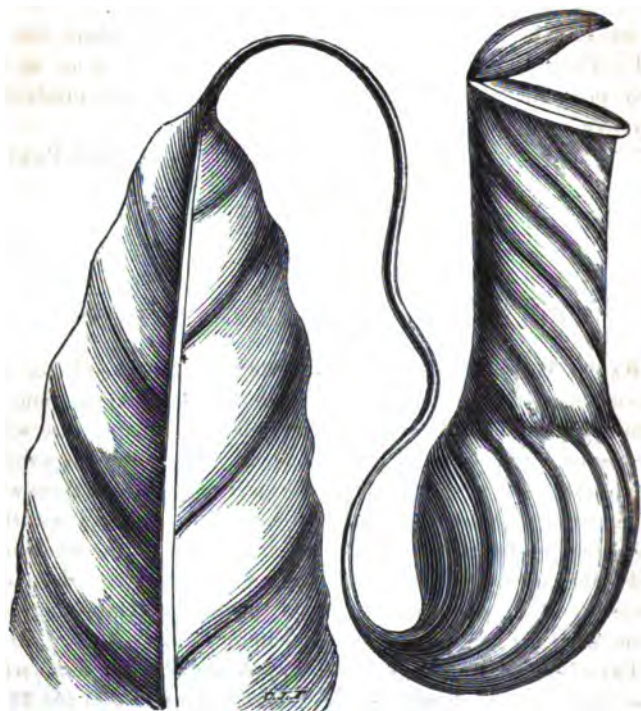
First.—Such as have hollow vessels or appendages attached either to their leaves or branches. The remarks made by Mr. Murphy, Vol. 1, p. 214--16, render it unnecessary to say much more relative to the *Sarracenia*. We might just add, however, that some pitchers which we examined the other day, placed on plants in our possession, contain flies of a large size, which must have crawled down of their own accord, since from their position on the sides, not having reached the bottom, it was evident they were walking down, and that they could not have been violent thrown in by any other insect. We also saw a large woodlouse (*Oniscus*) which had not reached the bottom. May not these have been allured by the sweetness found on the edge of the pitcher? particularly on that of the *S.*

adunca? This seems to have been the opinion of Macbride; the water, however, at the bottom is often very offensive, which no doubt arises either from the putrid insects, or the stagnation of the water, as we could not perceive any smell, in those just opened, where no insects had made an entrance, and when the water was fresh. The goblet shaped appendages attached to the leaves of the *Nepenthes distillatoria*, (Fig. 38,) are like so many organs of secretion, and furnish a strong reason for supposing that the plant supplies the water through the footstalks. These plants grow in China, and the marshes of India, in situations where they are partially submerged in water. Each pitcher has a curious lid, which is at first shut closely down, but, as the pitcher grows in size, the lids gradually open, and they are then found to contain a considerable quantity of water, which has something of a sweetish, though rather insipid taste. Within a few days after the lids open, the pitchers become the grave of a multitude of insects, chiefly flies, concerning which a variety of opinions have been entertained. The uses of the pitchers are scarcely known. *Rumphius* supposed they were intended as nests for a sort of shrimp frequently found therein.* *Linnaeus* thought they were reservoirs of water, to which animals might repair in time of drought, their lid being especially destined to close up the mouth of the vessel for the prevention of evaporation. Others suppose the putrid insects form a kind of animal manure which, passing through the footstalk of the leaf, nourishes the whole plant. It is difficult to determine what may be their use, but they can scarcely be considered mere reservoirs of water for animals, since the plants invariably grow in swamps and ditches, where such reservoirs would be useless. Besides, the lid never alters its position when once raised from the pitcher, and therefore does not prevent evaporation, the mouth being once opened. The water contained in the pitcher is, for the most part, evaporated within a few days after the opening of the lid, although there is evidently an increased secretion during the nights, yet never to any considerable quantity, at least not in our stoves. Professor L. C. Treviranus, of Breslaw, found that when the lid of *N. phyllamorphia* was open, the water diminished one half by solar evaporation, but it was restored again at night. In Ceylon, Mr. Campbell informs us, that animals of the *Simia* tribe are well acquainted with this plant, and frequently resort to it to quench

* Messrs. Kirby and Spence (*Int. to Ent.* Vol. 1, page 296,) think it probable that *Dytisci* oviposit in them; and that the *Squilla* or Shrimp which *Rumphius* found there was one of their larvæ, this being the old name for them.

their thirst. Still we can scarcely suppose this to be their destined use, for many other trees bear similar appendages, which could not be readily if at all emptied. Besides, the situation in which some of them grow, would render such a providential provision unnecessary. Whatever be their uses, there can be no doubt but they are necessary to the welfare and growth of the plant; for if one be inadvertently injured, the leaf to which it was attached becomes sickly, and for the most part incapable of performing its natural functions.

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So great a quantity of spiral vessels was discovered by Mr. Valentine, in the stem and petioles, that no plant has yet been noticed in which they are equally abundant. Now Bischoff ascertained that the air conveyed by spiral vessels contains about 28 per cent. of Oxygen, and as an excessive supply of Oxygen is destructive of vegetable life, it has been suggested, that the pitchers are intended to rid the plant of its oxygen, and that the water they contain has been discharged by the spiral vessels themselves. An observation of the late Dr. Jack appears to favour this opinion, for on examining the

pitchers he found their bottoms beautifully punctured, as if by the mouths of insects. Dr. Graham states, that the water contained in some of those which he examined at the Botanic Garden, Edinburgh, was at the first slightly acid, and that as the water evaporated the acidity increased, until the whole had passed off. Dr. Turner analyzed the water from an unopened pitcher, and found it to contain minute crystals of superoxalate of potash; and he says, that during the time of boiling, it emitted an odour like baked apples, from its containing a trace of vegetable matter. This is most of what is at present known of the uses of the appendages of *Nepenthes*. If some of our readers have made observations on any of the plants designated "Pitcher Plants," we hope they will report them to us, as they may probably tend to elucidate a subject at present involved in mystery.

JOSEPH PAXTON.

ARTICLE XII.

COLLECTIONS AND RECOLLECTIONS.

READY MODE OF REDUCING LEAVES TO MANURE.—I am very successful in reducing my leaves to manure. I collect an immense quantity during the winter, and carry them all to the yard where the cows are milked, and have their sheds. Their droppings reduce them quickly; but in order to make excellent manure of them within the season, I cause a light layer of earth to be scattered over them from time to time as they rise. In February, I turn the whole over, and I am sure to have the entire yard covered three feet deep with choice and valuable vegetable mould, fit for use at any time after June, particularly if the season be tolerably wet. J. M. T.

IMPROVED DAHLIA-STAND.—I was pleased with the forms which you have given of Dahlia-Stands, figured at pages 573 and 729 of your first Volume, and have tried Mr. Murphy's, page 573, and also had one of the others made. For the information of your readers, I give the results of my experiments. I have found both faulty. Mr. Murphy's stand is too small at the top. The branches of the Dahlia are but brittle, and if exposed to any wind, soon get broken against the top ring. I had many spoiled by them last year. Mr. Saul's will be liable to break. The manufacturer here confirms what your correspondent says in your March number for this year, and says he can make the other for a less sum. I do not know how Mr. Saul

can get his so cheap; here we are only four miles from the most extensive iron-works in the kingdom, and I cannot procure iron at the rate he mentions. After stating the faults, may I mention what I think will be the improvement. I have now altered one of my stands, which was made after Mr. Murphy's pattern, and have converted it into the form of Mr. Saul's, merely changing the top and bottom ring, and bending the uprights outward. It looks lighter and more elegant, and I think will not be so liable to break the branches of the plants, there being more space for them. The leaves of the plant will also in a great measure hide the bottom part of the stand, which will be more agreeable to the eye, than seeing the stand at such a distance from the stem.---AN ORIGINAL SUBSCRIBER, in *Yorkshire*.

QUICKSILVER-WATER WILL NOT DESTROY THE PINE-BUG, AND DESCRIPTION OF WITTY'S PATENT GAS-FURNACE.---In your *Register*, page 90, a Subscriber in Sussex (E. Esbury) wishes for a description of Witty's Patent Smoke Consuming Furnaces for Hot-houses, also if the Quicksilver-Water recommended by Speechley is successful for the destruction of Insects on Pines, I have several times tried the quicksilver exactly as Speechley prescribes, and was always disappointed, as I never could see the smallest impression it had on the meally or pine-bug, or white scale. I am therefore convinced by experience it has no power whatever on the bug, and white scale, and I know of no other insect hurtful to the pine. Mr. Speechley's writings on the pines and vines are highly to be recommended, but I cannot think otherwise but he has been under some mistaken notion in that part, and if he actually had the bug, and got the plants clean by using nothing but the quicksilver-water, I am in the opinion he must have put his plants under some change of cultivation which might clean them, and he imagined it was the quicksilver. My reason for thinking so is, a neighbour of mine had the bug on his pines, he tried several cures recommended by writers on gardening, but to no purpose. At the September shifting, he had no fresh leaves, and got horse-dung sweat and prepared as a substitute which he filled the pits with, laying a covering of old leaves on the top to plunge in; about six weeks after the plants had been in the dung-heat, he could not see the least vestige of bug on his plants: in the spring shifting, he disrooted the young plants, and again placing all his plants in dung, it completely cleaned his pines, which he had no thought of when he took the dung as a makeshift. When I came to this place, the pines were as dirty of bug as any I ever saw, and have got them perfectly clean by working them with dung-heat, and striking the crown and suckers in a hot-bed frame.

I have seen the Amonical Coal-Gas tried to destroy the pine-bug, as recommended by a gentleman in Ireland, in a report to the Gardeners' Magazine, the gas destroyed all the bugs that were on the leaf of the plants, but them that were in the soil among the roots, and about the neck of the plant at the surface of the pot were not the least affected, and in a few days they crawled from the root on the leaves when the plants looked as filthy as before the gas was applied; I therefore consider the gas no cure whatever.

I now come to give a description of Mr. Witty's Smoke Consuming-Furnaces. When I was gardener to Ralph Naters, Esq. Sandyford Lodge, near Newcastle, he had two hot-houses for pines and vines to the rafters, their furnaces were Mr. Witty's construction to consume smoke; the furnaces are fifteen inches wide, and fourteen inches high, the bars twenty inches long; on each side of the furnace there is a cavity or air-flue twelve inches high and three inches and a half wide with a door; this cavity or air-flue is separated from the fire on each side with a brick in the bed, till it come to the throat of the flue at the end of the bars where both cavities are open: the air circulates along the cavities and stagnates the smoke as it evaporates from the fire, by that means the smoke cannot escape so quick along the flue as it does in what is termed a good burning furnace, till the circulation of air the fire draws from below the bars, and the strength of smoke overpowering the air passing along the cavity, the smoke then escapes out of the chimney in a slow manner, a much whiter colour than it does from the common fires; but I always could observe as great a quantity of smoke from them, which made me distrust any of the smoke being consumed, and the flues were sooner choaked with soot than the other flues. When the air-flue or cavity door is kept shut, the fire burns nearly the same as other furnaces; but as they save no fuel, and create more trouble in cleaning the flues, I consider them a disadvantage instead of improvement.

WILLIAM GREY.

Beaufront, near Hexham, Northumberland.

THE BEECH TREE, A CONDUCTOR OF LIGHTNING.—In Vol. I, page 739, I observed some remarks by Omega, on the non-conducting properties of the beech. Omega states, that he had never been able to trace a single instance, in this or any other country, of the electric fluid striking the beech tree. An instance or two have come under my own observation, which, I think, afford sufficient proof that it is nearly, if not altogether an equal conductor with other trees. In the year 1821, or 1822, I do not recollect which, two very large beech trees, belonging to the Right Hon. Lord Gren-

ville, Bocconnoe, Cornwall, were struck with the electric fluid, no other tree being struck at the time. One was completely torn from the ground, the other being struck at the height of about ten feet, was rent from the top to the bottom. One of the trees stood by a small river, which runs through his Lordship's lawn, and the other in a wood about half a mile distant.

JAMES FROST.

DESIGN FOR A FLOWER-STAND.

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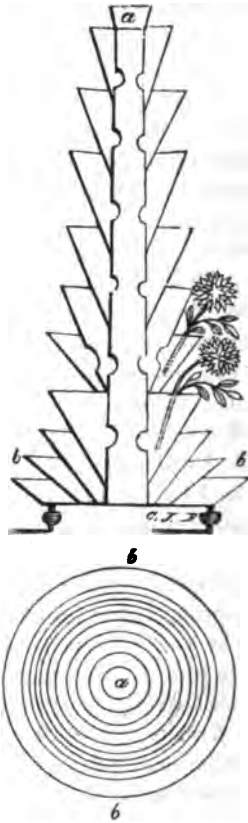
—I send you a design for a Flower-Stand, (Fig. 39,) for placing cut flowers in, which has an excellent effect, having the appearance of a complete pyramid of flowers. It is well calculated for shewing Dahlias, &c. each height of vessels is filled with water, and the flowers placed in as shewn in the outline beginning at (a), and filling every vessel down to (b). The whole is made of tin, and can be manufactured any size, and for a trifling expense.

M. SAUL.

CHENEPEDIUM BONUS-HENRICUS.

—The culture of this excellent vegetable appears to be very imperfectly known, except in the Kirton Lindsay Division of Lincolnshire, where it has been cultivated time immemorial, producing abundance of vegetation from May until October, far superior to spinach in point of flavour as well as utility. It is astonishing, that its culture is so little known, its method of cultivation being very simple. Make beds about four feet wide, plant in rows about one foot apart on a good soil; in the autumn clean the beds and cover them with rotten dung. In February make your beds good, and no more trouble is required. But to keep it sufficiently, pick it so as to prevent its seeding. It is brought to table precisely as spinach. By the insertion of these remarks in your valuable Magazine, I feel confident, you will induce many to give it a trial.

DECEPTION PRACTISED ON DAHLIAS.—As I grow a large quantity of Dahlias, I am consequently in the habit of purchasing



many new varieties to keep up my stock. I shall therefore throw out a few hints to the buyers of Dahlias, which to persons situated as I am may perhaps be of some service. When I receive a lot of new Dahlias, I examine them to see if any part of the old roots remain. If they possess roots, I plant them, if not, I cut them off even with the pot. I then take the top and plant it as hereafter described. I cut the shoots off just below a joint, then take off the leaves in a line from (a) to (b) (Fig. 40,) then leave the eyes untouched; but if instead of taking them off from

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(a) to (b) you cut straight from (a) to (c), you then cut out the eyes, which are to produce shoots the following year: this method is practised as I have found from experience. I purchased some Dahlias from a London nurseryman, very few of which grew the next year; and as I could not account for it, I applied to some of my neighbours who were precisely in the same predicament, and after many experiments they have found the cause to arise from the above method of cutting.



T. K. SHORT.

P. S. I will answer C. C. C. C. on cutting corn before it is quite ripe, for I have tried the system, unless some other of your correspondents save me the trouble.

EFFECT OF THE BERBERRY ON WHEAT.—The malign effect of the Berberry (*Berberis Vulgaris*) on Wheat, when growing in the neighbouring hedges, is well known to botanists. The fact mentioned by your correspondent Cæcilius (page 120) is in perfect accordance with the caution given under the head of *Berberry*, in Dr. Willick's Domestic Encyclopedia. It is to be hoped, that the attention of farmers will be drawn to this subject, and I have no doubt that similar mischief may be traced to other plants. C. C. C. C.

OXALIS CRENATA, A RIVAL TO THE POTATOE.—This plant has been recently introduced into this country from Chili, and it is not improbable that it may shortly command the attention of the agriculturist as a rival to the common potatoe. In April last, a small tuber of the root was planted by Mrs. Hirst, of Great Ropers, Warley, Suffolk, and the roots were taken out of the ground on the 5th of this month. The habits of the plant being very little known, this lady first placed the tuber in a small pot, and then in the open

ground of the garden. It appears, however, that this precaution was unnecessary, as the herbage grew very vigorously, and the leaves remained, and were but slightly injured by the frost until the roots were examined. Although the tuber planted did not weigh half an ounce, the produce weighed upwards of four pounds. Besides the family at Ropers, several other botanists had visited and watched the progress of this oxalis, and when a few of the tubers were boiled, all the party admitted that, much as they resembled the potatoe, their flavour was decidedly superior. This result is very promising, and when it is recollected that our common potatoe (*Solanum tuberosum*), also from South America, was confined to gardens more than a century, its tubers being small and watery, we may reasonably expect that cultivation will do much for the new plants. The stems were numerous, large, and diffuse; the flowers, which appeared in August were yellow, and slightly notched; hence the epithet *crenata*. At present the tubers somewhat resemble small kidney potatoes, inclining however to grow in an aggregate form.

A CURIOUS METHOD OF MANAGING BEES, IN EGYPT.—In Bishop Pococke's Travels in the East, is the following passage. "If I am rightly informed, they have an extraordinary custom in relation to their bees in Upper Egypt. They load a boat with hives at a time when their honey is spent; they fall down the stream all night, and take care to stop in a place by day, where the diligent animal may have an opportunity of collecting its honey and wax; and so making a voyage of six weeks or two months, they arrive at Cairo with plenty of honey and wax, and find a good market for both." I am not sufficiently acquainted with the management of bees, to know how far it is possible, occasionally, to move the hives without injury; but if it could be safely done, it appears to me, that much benefit might accrue from sometime removing the hives near to places where a supply of honey is abundant. Perhaps some of your correspondents who are well acquainted with bees, will favour us with their opinions on the subject. I. T.

TO DESTROY INSECTS ON FRUIT-TREES.—Allow me to propose the following wash, for destroying the various grubs and insects which are so mischievous to the fruit-trees. Take of water through which coal-gas has been passed, three gallons; flour of brimstone, one pound; and of soft-soap enough to make the whole into a thin paste, to be laid on with a painter's brush. It must be mixed over the fire, and it can be done so with perfect safety, for it is not inflammable. Many insects deposit their eggs in the bark, or in the young buds; and their larvæ or caterpillars do the greatest mischief.

The *Aphides* injure all the varieties of plum, and a *Coccus* sometimes abounds in such quantities on those trees, that in summer every twig is thickly beaded with little red half-round specks. In spring, the larvæ exhaust the trees, by sucking out the rising sap. The grub of a little brown beetle destroys the blossom of the pear-tree, and a saw-fly injures the fruit so as to cause it to drop prematurely. In short, almost every kind of fruit-tree has its family of grubs, which, in their larva state prey on the sap, the leaves, or the flower-buds; and to prevent this, the above recipe is intended.—The apple-aphis or American blight may be destroyed by smearing the parts infected with spirits of turpentine or oil. This enemy of the apple-tree was not known till the year 1787; it is a very minute insect, covered with a long cotton-like wool, and fixes itself in the chinks and rough parts of the bark. C. C. C. C.

REMARKS ON THE ECONOMICAL APPLICATION OF HEAT, IN FORCING.—The economical application of heat produced by fermentation for the purposes of forcing, is, to all persons, but more particularly to those possessing small gardens, of great importance, which I doubt not your *Register* will be the ready means of imparting, to those like myself wishing to become better acquainted therewith. The articles of Mr. Waldron, Vol. 1, page 399, and Vol. 2, page 63; Mr. Knowlys, Vol. 2, page 12, and Mr. Reynolds, page 13, shew considerable difference in the economic application of heat; the two former applying the dung in trenches, Mr. W. using loose stones at the bottom of the pit, for the purpose of retaining the heat, and Mr. Knowlys a chamber for the like purpose, whilst Mr. Reynolds makes a solid bed five feet thick, similar to those used for receiving cucumbers; the latter appears to me to be the most expensive method, and Mr. Waldron's the best. But the object of my troubling you, is to learn which of the first two methods is the best, for beginners like myself between several methods are often puzzled which to apply. Mr. Knowlys does not state what material he uses for supporting the spent bark in the pit, and preventing its falling into the air-chamber beneath, and whether it is perforated with holes to enable the heat to communicate readily with the bed.

HORTICULTURIST.

February 16th, 1833.

Our draughtsman made an important error in the plan and section of the pit, recommended by Mr. Knowlys, which will be rectified by another engraving in our next. We had intended it for this month, but a delay in the cut not being ready, we were unable to do so.

CONDUCTOR.

PART II.

REVIEWS AND EXTRACTS.

REVIEWS.

A NEW AND IMPROVED EDITION OF CURTIS'S BOTANICAL
MAGAZINE,

With amended Characters of the Species. The whole arranged according to the Natural Orders.

BY W. J. HOOKER, L. L. D. &c. &c.

TO WHICH THE MOST APPROVED METHOD OF CULTURE IS ADDED.

BY SAMUEL CURTIS, F. L. S.

Each Number containing Four Figures, Partly Coloured, 1s. Wholly Coloured, 2s.

THE first Number of the second Edition was published April 1st, 1833, beginning with the Order Ranunculaceæ Tribe Clematidæ, and Genus Clematis, of which four species are figured. With a view to render an acquaintance with the Natural Orders the more easy, and to adapt it to the comprehension of every one applying himself to the subject with common industry, the characters, the characters of the Orders, and of the divisions and subdivisions are given, accompanied by an explanation (usually in a parenthesis,) of such words as the student is not likely to have met with in works only introductory to the artificial system.

"Let not any one suppose, that the difficulties to be overcome in acquiring a knowledge of the Natural Orders are insuperable, from the circumstance of the characters of the primary divisions or classes, the Dicotyledones, Monocotyledones, and Acotyledones, being derived from such minute, and often inaccessible parts of the plant, as the *Cotyledones* of the Embryo. One of the great beauties of this system is, that the groups are not distinguished by isolated characters. The essential peculiarities are attended by others, often external and obvious, which though sometimes of difficult definition in words, yet soon become familiar to the practised eye of the student. Of the three great classes, for instance, the two *first* are recognized by the presence of *tubular vessels* as well as the common *cellular tissue*,—while the *last*, the ACOTYLEDONES (or *Exembryonata*, for they possess no embryo,) is destitute of these vessels, the Ferns alone excepted. Nor is this all, for the *former* (Cotyledonous and Vascular plants,) produce evident *flowers*, containing those organs essential for the re-production of the species, *stamens* and *pistils*: the latter (Acotyledonous and Cellulose plants) exhibit nothing really analogous to these parts, and have, moreover, so peculiar a habit and appearance, that the mere Tyro who has taken but a casual glance at the

Ferns, Mosses, Lichens, Characeæ, Algæ, and Fungi, will never be at a loss to distinguish them from every and all of the *Cotyledonous tribes*. Again, Cotyledonous Plants form two natural groups, not difficult to be recognised by external habit, and may be defined by certain characters. In the Dicotyledonous, the roots are *fibrous* or *fusiform*, never truly *bulbous*; the *stems* have an evident *bark* distinct from the *wood*, increasing by fresh layers within, (known by the name of *liber*;) a *woody* body, increasing by new layers on the outside, a central *medulla* or *pith*, from which the medullary rays diverge; *leaves* articulated on the stem with branched and anatomising veins; a *floral covering* or *Perianth*, mostly double (Calyx and Corolla,) with the parts of the flower very commonly *guinary* rarely indeed *ternary*; an Embryo with two opposite (rarely more and then verticillate) *Cotyledonous*; a *radicle* exposed, or external developing at once into the root; hence the class is by some called *EXOGENÆ*. The *MONOCOTYLEDONES* have the root *fibrous*, frequently *bulbous*, or rather *bulbiferous*, the *stems* have no distinct bark, no real wood, no medullary canal, no medullary rays; there are no annual layers, but the *tubular vessels* are indiscriminately scattered, and the increase takes place in the centre; the *leaves* are frequently sheathing at the base, they are firmly attached to the stem, and have parallel veins; sometimes connected by transverse ones, rarely branched or anatomising; *floral covering* or *perianth*, mostly single, or, if double, the outer and inner are rarely distinguishable in colour and form, and the parts of the flower are very generally *ternary*; *Embryo* with only one *cotyledon*; a *radicle*, usually inclosed within the substance of the embryo, which it bursts on its development, hence the term *Endogenæ*, applied by some to this class. The key to the study of the Natural arrangement, let it be remembered, and a most important one it is, is the Linnean system; for when a person has once acquired a general knowledge of plants by that simple method, he will find the path to this higher department smooth and easy, which to another would appear full of asperities and difficulties."

PRACTICAL GARDENING, CLEAR, SIMPLE, AND CONCISE,

FOR THE USE OF ALL CLASSES;

Containing many new and valuable Directions for improved Culture and early Production.

BY MARTIN DOYLE,

Author of "*Hints to Small Farmers*," &c. &c. &c.—12 mo.—1s. 6d.

WE are much gratified with the contents of this little book; its simplicity may render it of considerable use. Mr. Doyle has divided his subject into three parts. In the first are given Directions for Sowing, Planting, &c. in the form of a monthly calendar. The second contains Observations on the Culture of Seeds and Plants, referred to in the foregoing Calendar; and the third furnishes the reader with necessary information, on Producing early Crops of Vegetables, and the Treatment of some of the Fruit-Trees usually growing in the kitchen. The whole, together with an index, comprises 112 pages, and may be considered an excellent treatise to be placed in the hands of the cottager.

EXTRACTS.

HORTICULTURAL INTELLIGENCE.

CULTURE OF THE PINE-APPLE.—To grow this exotic to perfection, it is necessary to protect it from the severity of the climate all the year; and that mode of protection is best which admits the greatest quantity of light. The two most frequent evils in growing pines, are keeping them in too hot a pit, and suffering the soil in the pots to become too dry. Too great a heat from the bark must be avoided by a *regular supply* of fresh bark to the front and back of the pit, so as to prevent the necessity of adding a large quantity at the time of shifting the pines, by *riddling* the earthy part out of the old bark, and mixing the old and new well together, to prevent excessive fermentation. The bark heat is too great if it be above 100 degrees, Fahr. The heat may be checked by pouring water on the bed, by piercing perpendicular holes with a strong smooth rod of considerable thickness, by keeping the houses cooler than usual, and by a more free admission of air. If the temperature in any day rise to 80 deg. inside, the pines in fruit may safely be syringed over the whole herb, three, four, or in hot weather, six days in the week. At any time of the year, if there be plenty of sunshine, these plants may be syringed. The succession plants also may be syringed regularly from March to September. During this operation, and on days when the syringe is not employed, keep up a considerable degree of moisture in the internal air, by pouring water on the flues. The only point to be attended to, is, to see that, either by sunshine or artificial heat, the seeming excess of water is evaporated. Give water to the roots, as soon as the surface of the soil in the pots appears dry, which may be about once a week; give the most water to the White Providence, Envile, and Queen's, and less to the Antigua, Havannah, and Montserrat kinds. The quantity given to each plant, must be left to the discretion of the gardener, who has the charge of them. Give quite as much more in summer as in winter. The water used should be as rich as possible, by mixing with it the richest manure, such as hen-dung and soot; this is to be used from March to September, and once or twice in October, to pine plants of every age. The temperature of the water when given must be 90 degrees. Cease watering, either by the syringe or at the root, as soon as the fruit begins to change for ripening. It is always an object to keep all the plants "*slowly growing at all seasons of the year.*"

Take off no roots at any time, but such as have become dead; and attend particularly to draining the soil in the pots, by placing at the bottom of each pot some clean river gravel, cleared from all sand; and upon this put a little moss, to prevent the soil from washing down and filling up this draining. The soil should be as open as possible, consisting of rotten sods and vegetable mould, in a decaying state, formed of small sticks, leaves, &c., and well rotted cow-dung in equal parts, with one-tenth of ground bones mixed together when wanted. There is reason to think *coagulated blood* may be used to give increased richness to the soil, with benefit. A frequent and injurious practice is placing the plants too thick in the bed, and by that means preventing their regular expansion and free growth in their natural form. In the *succession house*, let the back row, be more than a yard asunder, and let them gradually diminish in distance to the

front row, where they should average eighteen inches asunder. Use deep pots, and have them, as much as possible, plunged quite up to the rims. The best pines in the last potting may be left unfilled up; and in the spring pull off a few of the lower leaves, remove part of the exhausted soil, and add about five inches of fresh compost, with a quart of bone-dust extra to each plant. Continue due attention to every plant till it has perfected its fruit; never huddling any plants together, under the idea that they will fruit off just as well. Never admit any air into the fruiting-house, until the thermometer indicates 80 degs. The succession houses having vines in them, must, of course, have air to suit them, which is generally such as suits the pines also. During bright sunshine, keep the walks always wet. It is of importance to have two fruiting-houses; one for plants in fruit for winter, and the other for those of summer. By keeping them separate, the plants in fruit, especially in winter, can be properly syringed, watered, and kept at a higher temperature than would be prudent if they were mixed with those intended to fruit the spring following.—THOS. APPLEBY.—*Gard. Mag.*

REMEDY FOR FRUIT-TREES CASTING THEIR FRUIT.—It is well known that although some trees both of peach, apricot, plum, apple, &c. are well furnished with blossom-buds, the blossoms often fail in their impregnation, and fall off; and when they are impregnated and set, they fall off at the stoning. Frequently, although they survive the stoning, they become prematurely ripe and fall off, and very few, if any, of the fruit attain maturity, while those which do ripen become vapid and have no flavour. These failures have been proved to arise from unwholesome food, a remedy for which may be found by the following method: Having selected a tree that is in good condition, and well furnished with blossom-buds, just as the blossoms are beginning to expand, take a potatoe-fork, and with it make holes all over the surface of the space occupied by the roots (which extends as far from the stem as the branches) at about eighteen inches apart, forcing in the fork to the full depth of the tines, and giving it a gentle heave, by pressing on the end of the handle; then, having dissolved some nitre in water, in the proportion of one ounce to three gallons of water, fill the holes with the solution. No manure must be given; but if, after the stoning of the fruit, the tree should appear unable to sustain its crop of fruit, the following preparation may be given, in the same manner as the nitre:—To one gallon of blood add one gallon of water, and one ounce of potash; stir the mixture well, and let it stand for a week or ten days; then pour off the solution from the clot, and, mixing one gallon of this liquid with four gallons of water, give it to the trees as above. The remaining clot may be dissolved by adding to it one quart of slacked lime, and one gallon of water to one gallon of clot; but this solution must not be given to fruit-trees, as it will produce the effect which the nitre is intended to remedy. It will, however, prove a good manure for the cabbage tribe, asparagus, celery, &c.—JOSEPH HAYWARD.—*Gard. Mag.*

USELESSNESS OF EARTHING UP POTATOES.—By drawing up the earth over the potatoe, in sloping ridges, it is deprived of its due supply of moisture by rains; for when they fall, the water is cast into the ditches. Further, in regard to the idea, that by thus earthing up the number of tubers is increased, the effect is quite the reverse; for experience proves, that a potatoe placed an inch only under the surface of the earth, will produce more tubers than one planted at the depth of a foot.—JOSEPH HAYWARD.—*Gard. Mag.*

FLORICULTURAL INTELLIGENCE.

CULTURE OF THE WHITE AND PURPLE DOUBLE-FLOWERED ROCKETS.—As soon as the plants have done flowering, cut the flower stems half-way down; by so doing, several small shoots will appear at the uppermost part of the portion of the stem left remaining. Then draw a small quantity of soil round the stools, and, if the weather be dry, give them water at different times, afterwards make a bed under a south wall of equal parts of loam, leaf-soil, and sand. Next take off all the strongest shoots, either at the root, or at the upper part of the stalks, and plant them in the prepared bed. In about a month, go over them again, and take away all the strongest shoots, and plant them as before; for by so doing the shoots left have a better chance of growing. Continue the above practice until all the shoots are taken from the parent plants, which then generally die.—WILLIAM WHIDDON.—*Gard. Mag.*

NEW AND RARE PLANTS, Figured in the Botanical Periodicals for June.

CLASS I.—DICOTYLEDONOUS PLANTS OR EXOGENES.

ORDER SOL'ANEÆ.—The Nightshade Tribe.

NICOTI'ANA LONGIFL'ORA.—Long-flowered Tobacco. This curious species of tobacco forms another interesting addition to the flower-border; its long, slender, dingy-white blossoms being produced in great abundance, and for several months in succession. The singular phenomenon, common to many white and dingy flowers, of expanding only at night, or in cloudy weather, occurs also in this plant. It is a native of Buenos Ayres, where it was discovered by Mr. Tweedie; and from seeds received from that enterprising collector, the plant was raised by M. Neill, of Cannon-Mills, near Edinburgh. *Culture.*—It is a half-hardy annual, thriving best in light rich soil, and is increased by seeds.—*Sweet's Fl. Gar.*

NICOTI'ANA PE'RSICA.—Shiraz Tobacco. This is rather a handsome annual, exhaling a faint but pleasant odour in the evening, at which time its white flowers are in perfection. In Persia, it grows three or four feet high. *Culture.*—It appears to require a dark rich soil, and most abundant watering during all the season of heat.—*Bot. Reg.*

ONAGRARIÆ.—The Evening Primrose Tribe.

CENOTH'E'RA DENSIFL'ORA.—Close-flowered Evening Primrose. A remarkable and new species, of which seeds were sent by Mr. Douglas, from Northern California, in 1831. It proves to be a hardy annual, bears numerous rose-coloured flowers of a small size, and produces abundance of seed. In some respects, this is different from the numerous species of Evening Primrose already in cultivation. Its peculiar habit arises from each of the axillary buds of the main stem, which usually produce a single flower, developed into a short branch, itself bearing flowers in the axillæ of its leaves. Upon the whole, Mr. Lindley is inclined to consider it a connecting link between *Gaura* and *Cenothera*.—*Bot. Reg.*

POMACEÆ.—The Apple Tribe.

AMELA'NCHIER FLO'RIDA.—Many-flowered Amelanchier. A native of North-West America, where it was found by Mr. Douglas. It forms a handsome hardy shrub, in the way of the Snowy Mespilus, flowering in May. Like that species it is best propagated by layers.

SCROPHULARINEÆ.—The Figwort Tribe.

MIMULUS ROSEUS.—Rosy Monkey-flower. This beautiful Monkey-flower was sent by Mr. Douglas from Northern California, in 1831. In his letter to the Horticultural Society, he spoke of it as extremely rare, and the most striking object he had met with in that country. A very few grains of seed were all that reached England; and from these a small number of plants was obtained. It is found rather difficult to manage, or the right mode of treating it has not yet been tried; for the plants kept in the open border during the summer by no means answered the expectations entertained of them. Only a very small quantity of seed was saved last year, by which means it has been preserved. It is however a perennial, and may be readily multiplied by cuttings. The plants in the garden of the Horticultural Society have been potted in loam and leaf-mould, and have been kept under glass. They are succeeding much better this season than the last.—*Bot. Reg.*

EPACRIDEÆ.—The Epacris Tribe.

EPACRIS CAMPANULATA alba.—White-flowering Bell-shaped Epacris. This is a native of New South Wales. It is a very lively and beautiful plant, growing to the height of from one to two feet, and requiring the protection of an airy greenhouse. It should be potted in sandy peat soil, and will propagate by cuttings.—*Bot. Cab.*

EPACRIS CEREFLORA.—Wax-flowered Epacris. This species is a native of Van Dieman's Land, was raised at the botanic Garden, Edinburgh, from seeds communicated by Mr. Newbiggin; and likewise by the Rev. Edward Craig, in January 1831. It flowered for the first time in April and May, 1832, the plants being still very small. Many of the plants flowered much more freely in March and April this year.—*GRAHAM.*—*Bot. Mag.* The flowers are white, having something of the appearance of wax, from whence it derives its specific name. Its culture will most likely be the same as the other species of Epacris.

CRUCIFERÆ.—The Cruciferous Tribe.

ARABIS ROSEA.—Rose-coloured Rock Cress. This species is a native of Calabria, and it is best treated by keeping it under a frame, though it will perhaps prove quite hardy, only having its flowers retarded by the backwardness of our springs. The flowers are large in proportion to the size of the plant, collected into a dense, rounded raceme or corymb, of a beautiful and rather deep rose-colour.—*Bot. Mag.*

CLASS II.—MONOCOTYLEDONOUS PLANTS OR ENDOGENES.

ORCHIDEÆ.—The Orchis Tribe.

DENDROBIUM FULCHELLUM.—The Handsome Dendrobium. This superb species is a native of India, where it probably grows upon trees. The flowers are exceedingly beautiful, being of a delicate white, tipped with rose-colour, and the centre part of each of a bright rich orange. It appears to thrive best in a small pot of moss, kept moist, and suspended from a rafter in the stove; it makes many branches, with numerous little roots pushing out in all directions, (*Bot. Cab.*) by which it may be propagated.

ASPHODELEÆ.—The Asphodel Tribe.

CALLIPE'OVA L'UTEA.—Yellow Pretty-face. Received from Mr. Douglas as "a new genus allied to Brodiaea:" it was found in Northern California, but in

what situations we are not informed. It proves to be a hardy, very handsome, bulbous plant, growing freely in a shaded peat border, and flowering in July. It is propagated by offsets, which it produces pretty freely.—*Bot. Reg.*

SCITAMINEÆ.—The Ginger Tribe.

COSTUS PICTUS.—Variegated-flowered *Costus*. Introduced from Mexico by seeds communicated to Mr. Lambert by M. Deppe, a zealous Prussian botanist, who has been engaged for several years prosecuting researches in Natural History in that country. The plant flowers more freely, and appears to be less tender than the other species at present cultivated in the gardens.—(*Bot. Reg.*) It bears orange-coloured flowers striped with crimson; and should be kept in the stove, and treated in the same manner as *Zingiber*.

NATURAL HISTORY.

PROGNOSTICS OF THE WEATHER.—It is often remarked, that the most extraordinary changes take place in the barometer during the first two and the last two months of the year, which is but saying, that these changes happen in the four coldest months of the year, viz. from the beginning of November to the end of February. When the barometer falls, and the thermometer rises, rain may be expected, especially in winter. In summer, during settled fair weather, both are high. A severe frost in winter is always preceded by a great rise of the barometer, and a proportionable fall of the thermometer. When the barometer in winter, or near the vernal or autumnal equinox, is at, or below 29 degs. 50 or changeable, and suddenly descends two or three tenths, a gale of wind and rain may be expected. When the same change takes place in summer, and early in autumn, it may precede either a gale of wind or only a thunder storm. When the mercury in the tube is fluctuating, unsettled weather may be expected. A sudden rise in the barometer is no proof, at any time, of a continuance of fair weather: but in rainy and cloudy weather, when the mercury is convex, and continues to rise slowly for two or three days successively, settled weather, for nearly a week at least, may be expected. In fine weather, when the mercury, being nearly 30 degrees, and concave, continues gradually to descend for some days, rainy and stormy weather will soon follow.

A current of air from the north, inclining either eastward or westward, will produce a condensation of the atmosphere, and consequently cause a rise in the barometer, the result being usually dry, cold, or cool weather, according to the season. A southerly wind, either easterly or westerly, especially the latter, will generally make the mercury in the tube descend. A south-west wind if it continue twenty-four hours, seldom fails to produce rain.

In foggy weather, if the barometer remain stationary, and especially if convex and inclined to rise, and when the fog dissipates as the sun advances towards the meridian, fine weather will follow; but otherwise rain. A ground fog in the evening will almost always be followed by fine weather the next day. When the mercury in the barometer is concave, although it may have risen in the night in consequence of a hoar-frost, if the clouds in the morning, towards the east, about sunrise, are of a deep red colour, rain will almost certainly follow, often it will fall in heavy showers in the course of the day.

If the wind be westerly, a rainbow in the morning indicates rain. The barometer will then certainly descend, and very often the thermometer will be higher than the usual temperature of the season. But with the wind in the same quarter, especially when the western clouds have a bright tinge of red, a rainbow in the evening, towards sunset, is almost a sure presage of fine weather the following day.

When it rains early in the day, with an easterly wind, the rain almost always continues until towards noon, but it is rather misty or drizzling rain than heavy showers. If it do not then clear up, the rain will not entirely cease before sunset.

The wind following the sun in his diurnal course with a gentle breeze is a presage of fine, and generally of settled weather. But if it backs from the west towards the south, rain may be expected. The barometer being concave, if the highest hills in the neighbourhood, in the morning, be cloud-capt, and remain so till afternoon, rain may be expected. But if the morning mist, on the summit of the hills, gradually disappears towards noon, fair weather will follow. Those who reside where there are no high hills in sight, may judge of the weather by the smoke of the chimnies. If it spread abroad, and scarcely rise above the house, rain may be expected in the course of the day. When it immediately descends below the roof of the house, rain is almost certain; but when the air is in a condensed state, the smoke will rise rapidly, and perpendicularly, if it be not immediately dispersed by the wind. It is sometimes unadvisedly said, that the air is heavy, and drives down the smoke, but the fact is precisely otherwise; for when the atmosphere is most condensed it immediately absorbs the smoke, as well as all other vapours and exhalations. Hence a condensed state of the atmosphere, which raises the barometer, produces fair weather, and the contrary high wind, and rain, or both.

NOTES ON MILDEW from a Lecture delivered by Professor Lindley, April 24, at the Horticultural Society's Rooms, Regent-Street, London. One of the most important errors existing respecting Mildew, is the belief so common amongst gardeners and agriculturalists, that one kind of mildew will infect several kinds of plants. This can never be the case; for each tribe of plants has a mildew peculiar to itself, which cannot, under any circumstances affect plants of a different kind. Mildew is nothing more than different kinds of fungi, or parasites, attacking different kinds of plants, varying in appearance and species according to the nature of the plants attacked. It is the greatest enemy to the agriculturist, but the gardener suffers severely from it.

These fungi are divided into three classes:—1st. Those which grow, or rather lie on the surface of leaves, and which perhaps do not derive any nutriment from the plant. 2. Those which are formed in the interior of the stem or leaf, and protrude themselves from it when ripe. 3. Those which only attack the roots. All are extremely simple in their organization, and very minute in their forms; they seldom appear but in the autumn, except in forcing-houses.

The first class, or-mildew composed of those fungi that live on the surface of the leaves, injure a plant by preventing its respiration, though they do not appear to draw any nourishment from it. One of the most common of the fungi which attack the common cabbage is the *Cylindrospodium concentricum*, (Fig. 41,) having the appearance of small white patches, or specks of frosty incrustation, which when magnified are found to consist of a number of small cylinders, lying end to end or across each other. These are filled with seed and

burst when ripe, scattering it in every direction. Wherever it falls upon the leaf it takes root, and the fungus spreads rapidly. 41

The superficial mildew, which attacks rose-trees and many other flowering shrubs, is a kind of *Urëdo*. This name, derived from *uro* to burn or scorch, is applied to those occasional discolorations of the surfaces of plants which were formerly attributed to blights, or injuries from the atmosphere, and which have the appearance of a brown powder. *Urëdo effusa* (Fig. 42), generally



shows itself on the under sides of the leaves of *Rosacææ*, and spreads rapidly. *Urëdo Rôseæ* is another kind, which also attacks rose-trees. The fungus called

Acrospôrrium monillôides (Fig. 43,) consists of a number of globules attached to each other, which, when magnified, appear like the beads of a necklace, and in many cases are found standing upright. When ripe, these globules fall, and, taking root, form fresh strings, or necklaces like the first. Sometimes little tufts of these gobules appear fixed to stalks, and, from some fancied resemblance to the brushes used for sprinkling



holy water, are called *Aspergillus*, (Fig. 44). The superficial mildew which infects the onion, and is fatal to that plant, is called *Bôtrytis*. Its name signifies a

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44



bunch of grapes; it is thus called from a fancied resemblance existing between that fruit and its clusters of little globular seeds and seed-vessels. The bean and pea have a superficial mildew, (*Urëdo Fâbæ*) which spreads along their leaves like white roots curiously interlaced. From these roots spring a number of branch-like shoots, each bearing a ball-like head, or brown berry, which when ripe, bursts, and discharges seed.

(To be continued in our next.)

PART III.

MISCELLANEOUS INTELLIGENCE.

I.—QUERIES AND ANSWERS.

WHAT IS MR. STAFFORD'S MODE OF DESTROYING SPARROWS?—On looking over your *Horticultural Register*, I see a reference to a method of destroying Sparrows given in a previous number, which I cannot find. May I request you to let me know the method, for I find them exceedingly mischievous? In return I beg to give an effectual Recipe for destroying Caterpillars on gooseberry-trees. Early in March dig the ground round the gooseberry-trees, a full spade deep, and you will bury the eggs of the caterpillars for that season. This I have found to be a sure remedy.

JAS. ALLIN.

Answer.—Mr. Stafford's mode of destroying Sparrows stated Vol. 1, p. 178, is to take a flat earthen dish, put a quantity of soaked bread in it, and place it upon a garden wall, out of the reach of any domestic fowl. Having fed them regularly for six or eight days, mix a small quantity of white arsenic with the bread, which will speedily poison them. This as well as former feedings should be given early in the morning. It need hardly be remarked that much caution is required in the use of this remedy, lest children should get at it. If Nux Vomica would answer the same end, it would be much safer.

CONDUCTOR.

THE PLANT FIGURED PAGE 140 IS NOT THE FICARIA RANUNCULOIDES.—I beg to draw your attention to an error in your number for March, page 140, in the representation of the figure of the Ranunculus Ficaria, which must have been intended for some other plant. The leaves of that plant all rise from the crown, each on a long foot-stalk, are heart-shaped, slightly succulent, and smooth-edged, not serrated. I inclose in this note, a small specimen. Sir Jas. E. Smith, Esq. Flor. 2nd Edit. Vol. 3, page 47, strongly objects to "*ranunculoïdes*" as a name for it. Johnson's Gerard has an excellent figure of the plant, under the old name of Chelidonium minus, p. 816.

T. B. BUXTON.

Answer.—The error originated in our draughtsman, and how it escaped our notice we can scarcely tell. We will, in our next, give a true figure of the plant.

REMARKS ON PRUNING FOREST TREES.—There are in a paper signed George, in your last number, some strictures on pruning, evidently written by a person who has never seen trees *annually* pruned for a period of twenty or even ten years, and therefore he can be no judge of the immense advantages attending this mode of managing timber. As respects ornamental trees, I perfectly coincide with him, and consequently differ from your facetious correspondent, Howden. He is a comical, but I have no doubt a very honest fellow, and I shall be glad to see more of his remarks in your interesting work. Pray ask your readers to prune half an acre *every year* from the time of planting, or fifty trees in hedge-rows for a period of ten years, that is, taking out from three to five of the largest and strongest shoots, and then I will allow that they are judges of the advantages or disadvantages attending this system, which is found so beneficial, wherever it has "Fair Play."

V.

RHUBARB PLANTS.—In answer to the enquiry of your correspondent "F." Vol. 1, page 666, I have to observe that it is, I believe, an ascertained fact, that allowing plants to seed has an exhausting effect, as well upon the plants themselves, as upon the soil they grow in. Some, which, if prevented from seeding, prove perennial, uniformly die the following winter, if allowed to seed. Others, if raised too late to blossom the year in which they are sown, are well known to

produce more vigorous plants and consequently finer flowers, the year following. Applying this principle to my Rhubarb, I remove its blossom-buds in their earliest infancy, except when I wish to perfect a few of its seeds: this, however, I have rarely attempted, as like the Potatoe, it is much more speedily propagated through the medium of its roots than by sowing the seed. Whenever I have allowed a Rhubarb plant to ripen its seed, I have found it suffer in the vigour of its leaves, not only during the year of its flowering, but on the following year also.

EDWD. BAVAR.

HOW DOES MR. HOARE, OF SIDLESHAM, TREAT HIS VINES?—As you are kind enough to answer the Queries of your numerous correspondents, or at least most of them, allow me to refresh your memory respecting the following, to which I have long been waiting for answers. At page 473, Vol. 1, your correspondent *Suffolk* enquires as to the peculiar method of training the Black Hamburg Vine on the open wall, practised by Mr. Hoare, of Sidlesham. Will he favour us with an account of it? or would you be so kind as to do it for him? Again, page 573, Vol. 1, does Mr. Mills mean that grapes can be grown on the *spur* system *under glass only*? And which do you consider the best method of *spur* pruning; the one of cutting off the wood of the foregoing summer, below any visible eye or bud, as he recommends, or the one mentioned in Vol. 2, pages 4 and 5, of pruning away all the foregoing summers' wood but one eye. And would not this latter plan soon allow the *spurs* to be long, even more than a foot or two, and become very unsightly? Permit me also to add the following Queries.—Would not grapes, say the Black Hamburg, Frontignac, &c. ripen well if grown in pots, trained against a south wall during the summer months, and then took into a warm room, to be placed close to a window having a south aspect? Last year I purchased some fine Dahlias ready struck, but this year not having a hotbed or greenhouse in which to strike them, how must I manage them? Would they succeed, if the roots were parted and planted once in the borders, or in a bed? If these Queries be not considered too trifling, or beneath your notice, answers to them next month, if possible, will greatly oblige a regular Subscriber.

ADOLESCENS.

VINES IN POTS.—With reference to certain Questions proposed by *Vignoniensis*, page 281, respecting the treatment of Vines in Pots, the reply to Question 1st. is, That the pots containing the plants are placed on the front flue of a vinery, the year preceding their introduction into the house where they bear. Their distance from the upright glass is about six inches. 2nd. I seldom make use of the syringe, preferring to throw a little water occasionally on the flues. 3rd. I repot the plants after the shoots are fully developed. 4th. The house containing the plants in bearing is a fruiting pine stove, and is kept at about the temperature of 60 degrees by night, and 70 degs. by day. During sunny-weather, I allow the heat to rise ten or fifteen degrees higher in the day-time. 5th. The quantity of water ought to be regulated by the state of the plant and other circumstances. A strong young plant will require much more water than a weak one. No rule can be laid down as to the stated-times of watering. What I wished to be understood in Vol. 1, page 1 and 2, by directing to water so often in dry weather, was, that the plants would require examining as often as there stated. 6th. The plants complained of had not received the attention necessary, during the year previous to the trial being made, and probably might be deficient of roots, or the wood might not be sufficiently matured. I have

now plants making as strong wood as those on the rafters, which have been subjected to pot culture for the last twelve years. The plan more to be recommended is to give each plant an alternate year of preparation. 7th. The compost is merely a vegetable mould, formed of the decayed refuse of the garden. 8th. It is the result of mismanagement in the treatment. The most delicate sorts will be free from these attacks when well managed in pots, whilst those trained up the rafters not unfrequently have their crops damaged. This originates in the roots not acting in concert with the stem; yet this cannot be the case when grown in pots.

I was honoured the other day with a call by an eminent gentleman, the High-Sheriff of this county, who from my recommendation has been giving the pot culture an extensive and successful trial. He assured me, that he now feels confident he shall be able to furnish his table with grapes throughout the whole year, by this accommodating process. And from accounts I have received from his gardener, there seems good reason to believe, that a plant may be so treated as to insure annually a produce of from fourteen to twenty good bunches of fruit.

Willersley, June 8th.

GEO. STAFFORD.

WHAT TREATMENT DO VINES IN POTS REQUIRE?—The very great success which has attended the modern practice of growing Vines in Pots, must recommend the system to every practical gardener. I am persuaded you will greatly oblige that very numerous class of your subscribers, the proprietors of small forcing-houses; by furnishing, at your earliest convenience, a detailed statement of the best method of preparing the plants, and pointing out what should be their subsequent treatment, as also what sorts are found to answer best. T. P. S.

Answer.—The chief part, if not all of the information T. P. S. wishes to receive is furnished at length by Mr. Stafford, in Vol. 1, pages 6, 186, and 487, also in Vol. 2, page 233, and in the present number; as well as by Mr. Smith, of Snelson, in Vol. 1, p. 236.—If any thing further be wished, we are satisfied Mr. Stafford, as well as some other of our correspondents, will feel a pleasure in furnishing the requisite information.

COND.

WHAT KIND OF A HOUSE SHALL I BUILD FOR VINES IN POTS?—In the first number of your highly interesting *Register*, you mention your intention of erecting a House purposely for the growth of Vines in Pots. I should be very glad, in common I have no doubt, with many of your subscribers, to know the result. Or if you, or any of your practical readers, Mr. Stafford for instance, would suggest the plan of a small and inexpensive house for that purpose, you would confer a great favour. The construction I conceive might be most simple, having no borders to prepare, and one flue, either hot air or warm water, would be sufficient. My idea is, to place the pots close to the back wall, and to train the vines up that, and down the rafters, which would check the rapid growth. No front or side windows would be requisite. I conclude you are acquainted with the Dutch mode of forcing in wooden houses, (double) seven feet high, six feet wide, and twelve feet long, and heated by manure inside the house, covered with tan, what do you think of it?

M. D.

April 22nd, 1833.

Answer.—We shall shortly enter more at large upon the Culture of the Vine, and shall then submit our ideas on the kinds of houses most suitable for the purpose. In the meantime, we shall be happy to receive any communications on the subject, particularly in reference to the present queries.

COND.

II. NATURALISTS' CALENDAR, OR OBSERVATIONS ON NATURE, FOR JULY.

In almost all dry pastures, that small but handsome blue-flowering trailer, the common Milkwort, *Polygala Vulgaris*, (Fig. 45, 1) may be found. It is supposed to possess the same medicinal properties as *P. Senega*, though it is but little used. In the same situations an abundance of the Upright Pearl-wort *Sagina erecta* (fig. 2), grows, which is thought to be very nourishing food for sheep; the flowers are white. In corn-fields, a little pink flowering annual, growing about three inches high, may be gathered in abundance. This is the little Field-Madder, *Sherardia arvensis*. The Knotted Spurrey *Spergula nodosa*, (fig. 3) grows plentifully on sandy heaths; it bears a white flower, and grows six inches high. In low and boggy places may be gathered the *Anagallis tenella*, or bog Pimpernel, fig. 5, it bears a little pink flower, and grows about three inches high.

ON THE COLOURS OF FLOWERS.—A purple Columbine or blue Larkspur, held over a lighted match, changes first to pink and then to black. The usual varieties of these flowers are blues, reds, and whites. The yellow of other flowers continues unchanged, and the same is true of the green colour of leaves.—

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The Primrose, winter aconite, yellow crocus, furze blossom, and daffodil all remain unchanged; but every other colour instantly disappears. If a scarlet, crimson, or marrow dahlia be tried, the colour changes, not to white, but to yellow, a fact known to many persons, who thus variegated their growing dahlias.*—
E. BLYTH.

HONEY IN FLOWERS.—It appears to be doubted what use the honey of flowers is calculated to serve. Dr. Darwin supposed, that the nectarious juice may be the food or nourishment of the pistillum and stamina. It may not be presumptuous to throw out a further conjecture on this curious subject; namely, that the nectarious juice may supply the pollen itself, since that subject is totally different from any part of the plant, and may be produced by evaporation from the more solid parts of the honey, whilst the more glutinous and liquid serve to produce that unctuous moisture which always pervades the stigma. This curious

* Field Nat. Mag.

fact might probably be ascertained from divesting the flower of the honey by perforating the nectarine with a needle, for the nectarious juice would then exude, and the flower be less injured than by excision or cutting off. It would thus be discovered whether there were any pollen in the antheræ, or any moisture on the stigma. This experiment ought to be performed immediately on the corolla opening, at which period the nectary begins to secrete its honey. It appears probable that the pollen of flowers is the finer parts of the honey, which, evaporating by the heat of the sun, is reduced to the state of farina.*—E. G. BALLARD.

MOLLUSCOUS ANIMALS.—In hedges and other shady situations, the *Helix hortensis*, or garden snail, (fig. 6) is common. It is rather smaller than the *Helix nemoralis*, page 4, but much resembles it both in shape and colour, and although it feeds on similar provisions it is not so destructive. In stagnant waters and slowly running ditches may be found the *Planorbis carinatus*, (fig. 7) *Limneus elongatus* (10) and *Limneus fragilis* (11). The first of these is a horn coloured shell, transparent, and nearly flat on both sides; it is hardly half an inch in diameter, with five volutions, the outer one growing suddenly larger. The second, *Limneus elongatus*, is of a brownish colour, and is often an inch or more long, regularly tapering, with seven or eight volutions or windings. The *Limneus fragilis* is of a yellowish colour, thin and transparent, nearly an inch long, and tapers to a very sharp point. In rivers and ponds, wherein the *Nymphææ* grow, the *Limneus Scaturipinum* (9) abounds. This shell is small, scarcely half a line long, and extremely thin and brittle. It may be found on the under side of the leaves of the *Nymphæa alba*, and not uncommonly on the *Nuphar* (*Nymphæa*) *lutea*, the common white and yellow water lillies. The *Cyclostoma productum*, (8) is a very scarce shell. It is of a pale straw-yellow colour, and is about $\frac{3}{4}$ of an inch long, and a little more than half an inch broad. These are occasionally to be met with on the sea coast. The river Thames furnishes an abundance of the *Cycas rivicola* (12). This is the largest species of the family, sometimes measuring three quarters of an inch in breadth. It is covered with a dark horny green epidermis, under which it is dead white; the inside is bluish.

INSECTS.—It has been said of our butterflies, that the natural length of their existence amounts to a whole year, because, occasionally, during the spring or winter, a specimen is met with some months after the usual time of their first appearance. Such instances are not in accordance with their general habits, but arise from accidental causes, such as the insect not having been able to meet with a male and propagate its kind. This is one of the most common causes of the prolongation of life among insects; nature supports them seemingly with the hope that they may yet succeed in finding one. † SOLITARIUS.

CHEAP CASES FOR PRESERVED INSECTS.—Cut a sheet of milled board into a folio size, square it round the edges and cover it on one side, for the back, with neat coloured paper. The other side, on which you intend to lay the specimens, cover with a paper corresponding in colour with the ground colour of the insects to be preserved. Then cut some boards into slips, about half an inch wide, and of a thickness to correspond with the body of the insects. Cover them with leather, and glue them round the edge of the other board, which will form a sort of drawer. Having made as many of these drawers of an equal size as will be convenient to be put together, string them at the back with whipcord, and bind them with an open back similar to a book. In each of these drawers gum the specimens. ‡ B. FAWCETT.

* Field Nat. Mag.

† Field Nat. Mag.

‡ Mag. Nat. Hist.

BUTTERFLIES AND MOTHS of most sorts are now on the wing, and abound in every quarter. The genus *Lycæna* now generally make their appearance, none of which, however, except the *L. phleas* are very common. The *L. dispar* fig.

46. we have seen in considerable numbers, in Nottinghamshire, but it appears to be a very local species, for we have not yet observed one in Derbyshire. Some of our readers may have noticed the devastations of a deep yellow caterpillar, with black head and tail, which perforates the bark of our fruit trees, and enters into the wood, making a hole not much larger than a small pea.

In consequence of their not being numerous, they are not very destructive, they enter into a pupa or chrysalis state in May, and the perfect Moth comes out this month. This is the Wood Leopard Moth, (*Zeuzera æsculi*.) Fig. 47.

SALUBRITY INDICATED BY INSECTS.

—Medically considered, swarms of house flies indicate unwholesome air, either from the vicinity of putrescent vegetable effluvia, or want of ventilation. They will accordingly be found most troublesome in the airless lanes, or narrow streets of cities, and no less so in the airy localities of cottages, or farm houses, if these be in

the vicinity of stable yards, dung-hills, compost heaps, hot-beds, &c. Gnats again, and other congeneric insects, indicate the existence, in the neighbourhood, of stagnant water, and marsh land,—a miasmatic * locality liable to low fevers, ague and rheumatism.

The amount of Sunshine during the month of May is as follows:

May	Morning.	Evening.	Total.	Average Daily.
	144 hours.	142 hours.	286 hours.	9 h. 13 min. 32½ sec.

Being seventy-four hours more sun than during May last year.

* Putrid Air.



III.—SOCIETIES, CONNECTED WITH HORTICULTURE AND NATURAL HISTORY. LONDON HORTICULTURAL SOCIETY.

THE month of May was distinguished for the excellence of the articles contributed both at the Meetings which usually take place in Regent-Street and, in numerous instances, at the first grand exhibition held at the garden. The sudden change which had taken place in the temperature of the season, was, however, found to favour the articles exhibited at the one as much as its effects were hurtful to the productions displayed at the other. The principal articles received in Regent-Street during May were very fine specimens of *Magnolia gracilis*, *M. Soulangeana*, *M. obovata*, Enville Pine Apples, Sweeney Nonpareils, *Gladiolus blandus*, *Ramondia Pyrenaica*, *Schizanthus retusus*, a seedling Peony from *P. paevaraeae*, *Oncidium papilio*, 110 heads of *Asparagus* weighing $3\frac{1}{2}$ lbs., Hybrid *calceolarias*, some splendid *Cactus*es including the varieties *Speciosus*, *Speciosissimus*, *Jenkinsoni*, *flagelliformis*, and *Speciosus* grafted on *Opuntia*. The three first named, possessed from one to two hundred blossoms on each plant, and presented a most imposing appearance. On the 25th, about 2000 visitors attended the first of the three Meetings at the Society's garden, where a very fine show of flowers took place, notwithstanding the extreme heat and dryness of the weather which, operated materially against it. The exhibition was arranged under an elegant tent of very large dimensions, and the scene was enlivened by the presence of the Tyroloese Minstrels and the band of the Grenadier Guards. The following award of Medals was made by the Judges.—The large Medal to Mr. Snow, gardener to J. H. Palmer, Esq. for the superiority of his greenhouse plants, and Banksian Medals to Mr. C. Brown, of Slough, for Tulips and Heartsease; Mr. Lee, of Hammersmith, for China Roses and Azaleas; Messrs. Colley and Hill, of Hammersmith, for Pelargoniums and Yellow Noisette Roses; Mr. R. Chandler, of Vauxhall, for Greenhouse Plants; Mr. G. Mills, gardener to A. Copland, Esq. for Flowers and Fruit; Mr. Niemann, gardener to P. C. Labouchere, Esq. for forced Apricots, Raspberries; Melons, &c. Mr. Waterer, for Rhododendrons and Azaleas; and Mrs. Colville, for *Oncidium altissimum*. The customary Meetings for June have not either been wanting in attraction; the *Alstroemerias pulchella* and *pelegrina*, Double Yellow Roses, Paeonies, Roses, Pentstemons, and Scarlet Sweet Williams, having been very conspicuous in the collections. Papers have been also read on the management of the *Cactus*, and on the means of obtaining abundant autumnal crops of the double-bearing *Hautbois Strawberry*.

IV.—MONTHLY HORTICULTURAL CALENDAR.

FOR JULY.

FRUIT DEPARTMENT.

Budding Peaches, Nectarines, Apricots, &c. may now be performed; for the system, see p. 259.

Summer Pruning must now receive attention, a good sprinkling of fruit being left upon the trees till after the stoning season.

Apple Trees have suffered much this year from caterpillars; those in webs, if not too abundant, may now be gathered off with the hand, and the trees should be well washed with strong soap suds, by means of an engine.

Pear Trees during this month are often infested with a number of small larvae, probably of the saw-fly family which feed upon the upper rind and pulp of the leaves. They may be known by the spotted and glutinous state of the leaves. To destroy them, add about a bushel of good quick lime to ten gallons of water, which must be stirred up for a day or two. After it is settled, use the clear liquor, working it on the tree either with an engine or syringe. Another small insect is prevalent this month, which mines in the leaf, but seldom materially injures the tree. It feeds till about August, and then retires into crevices of the wall where it passes into a chrysalis state, and the perfect fly appears in the June following. To destroy them, bean stalks or pieces of old woollen rag may be stuck in different parts of the tree, inducing them to take shelter therein. In winter, the shreds may be taken from the tree and boiled, previously to being used again.

Plum Trees.—Thin the fruit, and use them for tarts where they are too thick. Should the trees be infested with aphids, obtain some good soap suds, or dissolve one pound of common soap in twelve gallons of water, adding two gallons of very strong tobacco water. With this mixture, syringe the trees, and they will soon disappear.

Cherry Trees are seldom troubled with the black Aphis this month, for in general they all appear to emigrate. Should any remain, they can scarcely be interfered with when the fruit is ripening, without the flavour being much damaged. Before the fruit begins to ripen, or after it is gathered, a good washing with the same mixture, as recommended page 254, will eradicate them, and in a great measure prevent their appearance the following season.

Peach and Nectarine Trees, if infested with the aphis and red spider, will require the use of the following mixture. To three bushels of quick lime, and three bushels of soot, add twenty gallons of soft water. Stir this up for several days, and take off the scum as it rises; then take the clear liquor, and add one quart of good tobacco-water to every two gallons of the liquor, and about a quarter of a pound of sulphur. Syringe the trees once or twice a week in dry weather, and they will soon disappear. Occasionally wash the trees with soap suds, and you will free them from much filth, and gently promote their health. All these operations, however, must be avoided when the fruit begins to ripen.

FLOWER DEPARTMENT.

Azaleas should now be propagated by cuttings of the young wood planted in sand under a hand-glass.

Roses should now be budded, p. 68, those trained on trellis, infested with aphis, should be syringed with a mixture of tobacco-water and clear lime-water.

Ranunculuses now being out of flower must be taken up and spread in a dry airy situation previously to their being laid by.

Tigridia pavonia.—Seedlings sown and transplanted on a hot-bed may be fully exposed to the air.

Lemon and Orange Stocks may be budded if the bark will rise freely.

Greenhouse Plants of most sorts may be propagated by cuttings; those in pots standing out of doors will require a good supply of water.

Violets may be readily increased by the young shoots, which are plentifully striking root.

Late Annuals.—Hardy Annuals sown now come into flower the end of September, see p. 110.

Dahlias may be propagated by cuttings.

Rose Acacias having their shoots shortened, will push anew, and flower again in the autumn.

Carnations.—Transplant seedlings six inches apart in an open airy situation, in fresh light earth. The flowering plants may also be layed, or cuttings planted under a hand-glass.

Calceolarias should have a top-dressing, see page 267.

VEGETABLE DEPARTMENT

Mushroom-Beds now made come into use at the end of August.

Garlic and Shallots will in general be ready to take up, which should be done in dry weather.

Beans.—A few *Mazagan* or *Longpods* may be put in about the 1st and the 10th.

Pears for late crops must be sown not later than the middle of the month.

Onions.—When young onions are required for a regular supply, there may be a few sown about twice during the month; those full grown should now be taken up.

Mustard and Cress should be sown once a week.

Radishes.—*Short-Top* should be sown every ten days, and *Turnip-rooted* twice in the month.

Kidney-Beans should be sown the 1st and the 10th, for the last crops.

Spinach.—Sow the round seeded about twice during the month.

Cabbage.—Seed for an early crop, to cut in spring as coleworts, should be sown about the 1st and in the middle of the month, and they will be fit to plant out by the 1st of September. In dripping weather continue to plant out Savoyas, &c.

Broccoli.—Transplant early sown plants, and sow some *Green Cape* and *Early Purple Cape* to produce in April next year.

Lettuces now sown come into use the beginning of October.

Leeks should be transplanted in rich soil six inches apart.

Cauliflowers planted out now will come into use from September.

Celery for winter use may now be planted in trenches.

Endive.—Early sown *Endive* now planted off, will be fit for use from the end of September. Sow more seed about the first and second weeks, for late crops.

THE HORTICULTURAL REGISTER.

AUGUST 1ST, 1833.

PART I. ORIGINAL COMMUNICATIONS.

HORTICULTURE.

ARTICLE I.—A NEW WAY TO GROW EARLY POTATOES.

BY MANCUNIENSIS.

ON walking out the other afternoon, in company with some friends, we were caught in a thunderstorm, and obliged to take shelter in a farm-house, the owner of which was known to one of the party.— During the storm, the conversation turned upon gardening, and our host gave us a plan for raising new potatoes, which I send you. It may appear strange, but, as he says, he has tried it, and found it to answer very well. At all events, I think it worthy of consideration and a trial. I will give his own words, so far as my recollection serves.

“I was getting up my potatoes one year, in that field below the house, when the thought struck me, that by planting the smallest of them again, immediately, they would grow, and I should have new potatoes very early. I resolved to try the scheme. I had no hot-house or greenhouse, and was therefore obliged to hit on a plan for keeping off the frost, which I did as follows. I chose a part of the field in which I was working, and made trenches along the top and the sides to keep it dry, I then covered it a few inches deep with litter, put on a few inches of soil, and planted the potatoes, covering

them again with soil. In order to keep the earth from falling down and smothering them, when they began to shoot, I stuck sticks and brushwood over the last layer of soil, and put on a quantity of litter, covering the whole with soil. One of my neighbours who saw me, was surprised, and said he was sure I should have nothing in the end, but I told him to come again on new year's day, and we would see. We did so, and we opened the bed and found new potatoes about the size of a marble; I then told him I would leave it until the 6th of March.* I did so, and on opening it again, the new potatoes were as large as an egg, exceedingly well tasted, and quite mealy. I showed some to the gardeners in the neighbourhood, who would scarcely believe me, when I told them how I had grown them."

The situation in which they were grown, and which I myself saw, was on the north side of a hill, in the northern part of Lancashire, not the warmest situation in the world, as you may imagine.

The idea of growing potatoes in the manner above stated is good, but my informant's mode is, I think, capable of improvement. If, instead of the side of a field, an old hotbed were used, and hoops placed so as to prevent the soil from falling down and pressing on the young shoots, which would not grow very high, as potatoes when deprived of light do not grow so much above-ground as they do naturally, I think early potatoes might be raised without any expense. I intend to try it, at all events, and hope some of your readers will do so likewise.

MANCUNIENSIS.

June 3rd, 1833.

ARTICLE II.

ON MR. SEYMOUR'S SYSTEM OF TRAINING PEACH AND NECTARINE TREES.

IN ANSWER TO MR. THOS. CAMERON, BY MR. HENRY DYSON.

INADEQUATE as I feel myself to do justice to the undoubted superiority of Mr. Seymour's system of training wall-trees, I willingly obey the call of Mr. Cameron; and, with the strongest convictions of the truth of my statements, I boldly and fearlessly assert, that it is the ne plus ultra of perfection, that its fabric is based upon a rock, and never can be shaken. Having thus far indulged the expression of

* The 6th of March is, I think, a great Fair in the neighbourhood.

my views, I will endeavour, in the plainest and most intelligible manner, to answer Mr. Cameron's observation at page 203. I consider it a subject of first rate importance to gardeners, and have only to regret, that the discussion of its merits, for its defence is no part of the question, has not fallen to the lot of an individual more capable of doing justice to its superiority.

The first remark of Mr. Cameron necessary to be noticed, at page 203, Vol. 2, is the positive assertion that Mr. Harrison's statement is correct, at page 532, Vol. 1, namely, "that the origin of a new shoot will each year be farther removed from the main branch;" while in the same sentence he admits, "never so much so, as to have an unsightly appearance." From this assertion and admission of Mr. Cameron, I must positively dissent. As to the assertion, had Mr. Cameron taken the trouble to read attentively the first paragraph, page 675, Vol 1, and the last paragraph on page 676, he would have spared me the pains of again refuting such arguments. He may rest assured, that had Mr. Harrison felt his ground tenable, the advocacy of Mr. Cameron would have been superfluous. For after the third year's training in of the laterals, if in any instance an inch or two of naked wood should arise, which has been inappropriately denominated a spur, it will generally admit, under proper management, of being cut away, together with the fruit-bearing lateral, at the latter end of October, or the commencement of November, in consequence of a young shoot having struck, at or about the base of the original lateral. Since Mr. Cameron attempts to train trees on Mr. Seymour's system, and has not yet discovered the mode of extirpating what has been called a spur, probably he may yet be disposed to cavil about the matter; in which case, I beg to refer him to the originator of the system, and if that be not satisfactory, let him go to the trees at Carlton Hall, and have ocular demonstration. If his assertion be allowed, his admission is consequently abrogated; for, by permitting what has been termed a spur not only to remain from year to year, but to become lengthened from time to time, on account of the young shoot being, as he states, farther removed from the main branch, an unsightly appearance would soon present itself; but this is obviated in the manner described. As to Mr. Cameron's opinions, "that a greater quantity of bearing wood may be obtained in the same space, and consequently larger crops by the method of fan-training, than by Mr. Seymour's," I beg to inform him, that, on the seventh day of May instant, Mr. Seymour abstracted from one of his peach-trees upwards of one thousand of fruit at the first thinning, still leaving a great quantity to thin off afterwards, indepen-

dent of a full crop retained for maturation. And I would further inform him, that such a circumstance is by no means rare or extraordinary, but a common occurrence. The number of fruit, which the tree referred to is usually permitted to ripen, amounts to nearly six hundreds, and other trees, both peaches and nectarines, are equally prolific according to their relative size and power. With such incontrovertible facts before us, what becomes of Mr. Cameron's *candid opinion*" about a greater quantity of bearing wood and larger crops of fruit? Will he again endeavour to support such an argument,—or will he avow such an opinion? Can he deny, that a treble quantity of productive wood might as easily be retained as dispensed with on this system, provided the least necessity for its retention existed? Mr. Cameron has adverted to the figure of a tree, No. 21, page 146, as containing twenty-eight main branches, which, had it been engraved according to the figure furnished for that purpose, would have contained two additional principal branches on the right hand side. Nor would it have represented several laterals as emanating from the main stem of the tree; or have exhibited the laterals of such great and irregular lengths. The figure 22 is also very defectively delineated.

2. Since Mr. Cameron cannot imagine the *reason* of the fruit being larger on Mr. Seymour's system, I will endeavour at a future time to supply it at length, for certainly other reasons and aids to swell and improve the fruit appertain to Mr. Seymour's system, which are denied to every other plan of training.

That this is a new broached doctrine, I am perfectly aware, and therefore intend at some future period to establish its truth. One leading cause why the fruit are larger, and consequently better flavoured on Mr. Seymour's, than on the old fan system, is, that a multitude of unnecessary branches are dispensed with, each of which, if suffered to remain, would devour a portion of that exhilarating sap, which is the common food of wood, leaf, and fruit; combining also with the judicious mode of stopping the terminal shoots on the first thinning of the fruit, which on early walls will occur about the beginning of May. The terminal shoots being stopped, nearly the whole resource of the tree, its sap, is consequently *propelled to the fruit*, which is proved to demonstration by the amazing swell of the fruit, during the next successive fourteen days. At the period of stoning it will frequently exhibit as large a size as those on the old fan system have attained, when in a state *called* their maturity. I have in page 146, condemned the old fan system as founded upon erroneous principles; and, notwithstanding the *experience* of Mr.

Cameron, I reiterate my anathema against it. He appears to rest upon the opinion of Mr. Seymour, Jun., and I have authority to state, that Mr. Seymour's son, at Ealing, and another son in the south of England, have never had the opportunity of seeing their father's system in its now perfected state. As to the driving of nails on this system, I would merely observe, that many are driven which are never intended to be withdrawn; for on the removal of one tree and the substitution of another, the system is in such strict uniformity, that the nails to which string is attached are generally as applicable to one as the other: and their being well driven home renders them less offensive to the eye.

With reference to his quotation respecting the use of a wash whilst the trees are in bloom, page 676; if Mr. C. will turn to the last sentence on page 673, Vol. 1, he will perceive that it is a detail of the treatment of trees practised at a particular place, and that it is not urged by me as absolutely necessary. However, I have seen it applied during the blooming season, and no scarcity of fruit resulted therefrom. Still I will not advocate the necessity of its adoption, being of opinion that its free application, immediately after the first opening of the blossom-buds, would be attended with prejudicial effects.

Having noticed each of Mr. Cameron's objections, and answered them, I trust, to his satisfaction, let me remark in conclusion, that if in candidly expressing my opinion of the relative merits or defects of these systems, my inexperience in writing, and the ardour of my youth have betrayed me into the use of any intemperate language, such was not my design. In fact, I feel more obliged than offended by Mr. Cameron's dispassionate remarks.

In speaking of the perfected state of Mr. Seymour's system, I beg to be understood as referring definitively to peaches and nectarines only; although the same mode of training is applicable to several kinds of pears, to plums, and to Morella cherries on north walls.—On this subject, I may probably furnish a paper at some future opportunity.

HENRY DYSON.

Baslow, May 10th, 1833.

ARTICLE III.

NOTES ON THE IMPORTANCE OF DISPERSING THE VARIOUS
VALUABLE PRODUCTIONS OF THE EARTH.

BY MR. I. SOMERSET.

OBSERVING that you have given in your valuable *Register* the best method of conveying plants and seeds across the ocean, I send you a few notices to shew the importance of spreading the numerous valuable productions of the earth throughout the various colonies of England, and also how easily any individual may assist in conferring the greatest benefits on mankind, if he have facilities for planting or dispersing such things among his friends or neighbours.

In 1493, Columbus ordered those whom he left behind him at Fangori to search for gold-mines, and to sow European seeds.

In 1493, Columbus took a cargo of domestic animals, seeds, vine-cuttings, and sugar-canes on board, and discovered Dominica.

1494. The King of Spain ordered Columbus to prepare a farm, to lend the labourers fifty bushels of wheat and other corn from the government stores for seed, with twenty couples of cows, mares and other beasts of burden. Gardeners and husbandmen were sent out, and the settlers were also ordered to build houses and plant vineyards and gardens.

1494. Columbus founded the town Isabella. Several sorts of seed were sown, which grew rapidly and luxuriantly. On the shore of the river they made orchards and gardens, in which all kinds of the larger herbs, such as radish, lettuce, coleworts, borage, &c. became ripe within sixteen days after the seed was sown. They have likewise melons, gourds, cucumbers, and other like matters; as also the roots of canes or reeds, of the liquor whereof sugar is made, but the liquor is not yet hardened. The like they affirm of plants of vines, saying that they have the second year gathered ripe and sweet grapes, but by reason of too much rankness they bear but few clusters. All kinds of pulse, as beans, peas, fitches, tares, and other such are ripe twice a year.

1503. Orando found out the chasing of the wild boar in St. Domingo. There were none when the Island was first discovered, but the domestic animals brought by the Spaniards had run wild and multiplied exceedingly. The governor gave orders for cultivating mulberry trees.

1516. The plantain tree was carried from the Canaries to Hispaniola, by a Dominican.

1518. The sugar-cane from the Canaries, which had been brought by a person named Aquilon, in 1506, had increased so much that a mill was erected in St. Domingo by a native of Vertinga.

1518. Bernal Diaz having brought some orange seeds with him from Cuba, planted them near one of the places of worship in which he had sought shelter from the Musquitos. They grew and flourished, and bore fine oranges, and were the first ever seen in new Spain.

1519. In Jamaica, some of the Spanish inhabitants had planted vines, and made several casks of good claret.

1526. The King of Spain ordered, that whenever any thing remarkable was found they should buy it for him.

1538. Horses were bred with much care in Cuba; the breed was famous for strength, shape, and colour. Many persons had twenty, thirty, or even seventy horses in their stables.

1565. At Curagoa, there were 100,000 cattle, all bred from a dozen of each sort in twenty-five years.

1616. A ship, from the West India Islands, arrived at Bermudas with figs, pines, sugar-canes, plantains, papaws, and other plants, which were immediately cultivated with success. The *Edwin* was sent from Bermudas, by governor Tucker for the purpose, in pursuance of orders from England.

1647. Tamarine-trees were first planted about this time at Barbadoes, also the palm-tree; the latter being from the East Indies.

1666. The cacao-tree was planted at Port au Paix, and Port Mangot, and soon spread over the Island by Mr. Ogeron.

1715. Coffee was first brought to St. Domingo.

1744. Seeds of Guinea-grass were brought from Guinea to Jamaica, to feed some birds presented to Mr. Ellis. The birds died, the seeds were thrown out, where they casually grew, and the eagerness of cattle to eat the grass suggested the idea of cultivating it. A vast advantage has been derived from its thriving in the most rocky places, which otherwise would be of no value.

1757. The seeds of the Barbadoes cabbage-tree were first brought to Jamaica, by Governor Knowles.

1772. Plants of true cinnamon, logwood, turmeric, East India mango, Tobago nutmeg, sesamum, cassia, anatto, China tallow-tree, vanilla, &c. were in the St. Vincent garden.

1782. Lord Rodney took a French ship from the Isle of France to St. Domingo, with a large collection of oriental exotics, and a few plants of the real cinnamon.

1783. Cochinchina rice, and the tallow-tree were first raised

in Martinique. They were also sent to Paris from Canton, by M. Lamy.

1789. The Baron de Wimpfern carried out the first seeds of narcissus, hyacinth, and violet ever known in St. Domingo.

1790. The plants taken to Jamaica by the Earl of Effery have succeeded beyond expectation, Gazzerat wheat, barley, Ashmoor rice, pulse, &c. as also a species of mangosteen.

1793. Admiral Blyth brought the bread fruit-tree to the West Indies.

June 1799. Mr. L. Millington sent some East India seeds to be distributed in Barbadoes, and a plant of the teak-tree was preserved.

1809. The spice plantation of La Gabrielle is specially protected by an article of the capitulation of Cayenne.

Rice was carried to Carolina in the following manner:—Thos. Smith, the governor in 1683, had been at Madagascar, the country of rice, when a ship from that country with slaves was driven in distress. Mr. Smith expressed a wish to try some rice in his garden, the cook gave him a small bag, he sowed it in a place now called "Longitude Lane," the crop was distributed, and from this small beginning did the staple article of Carolina take its origin.

The history of Indigo in America is also very curious. At one time it was the second staple produce of Carolina. Mrs. Punkney received some Indigo seeds for her garden from her father, the governor of Antigua. She planted them in March, 1742, the Indigo was cut down by the frost, she planted again in April, and it was lost again. She tried again and having succeeded, she distributed the seed. Hence the culture became common, and in a few years it was an article of export.—*Pitkin's Stat. Amer.*

I. SOMERSET.

ARTICLE IV.

ON THE NATURAL HISTORY, CULTURE, AND PROPAGATION OF HERBS.

BY JOSEPH PAXTON, F. L. S. H. S.

BALM, *Melissa officinalis*, called by the ancient Greeks *Melisso-phylum*, or Bee-leaf, receives its generic name from the Greek word *Meli*, honey, because bees gather an abundance of honey from its flowers. Its smell has been supposed to be very attractive to bees, and hence arose the custom of dressing hives with balm and honey or sugar, previous to taking a swarm, a practice which still prevails.

Pliny mentions the use of these means as prevailing in his day, and he considered the juice to be a good remedy in case of being stung by either bees or wasps. Virgil recommended the use of the juice to entice back a swarm that had strayed, supposing it to be capable of effecting that object. It is a native of the south of Europe, whence, according to the best authority, it was introduced into this country, in 1573. Our old English herbalists, speak highly of its medicinal properties, but it has nearly fallen into disuse, except in a decoction which is drank in fevers, &c. Dr. Whitlaw, in his "Medical Discoveries," mentions it as good for hypochondriac and hysterical complaints, as well as for palpitations of the heart.

Propagation and Culture.—It is propagated by a division of the roots, or by slipping a single stem from the root. The former method may be adopted either in spring or autumn. Plant, in common light soil, both slips and roots, in rows one foot apart, and the plants eight inches apart in the rows, giving a little water if they should require it, and they will soon grow very freely.

To Gather for Drying, choose a fine day, just before the plants come into flower, for at that time they possess the most strength. Dry this herb in the shade, as rapidly as possible, or it will partially lose both its quality and colour; an heated oven which affords a good warmth will serve the purpose well; perhaps nothing answers better than a small press. When dry, wrap it up in white paper, and keep it in a drawer till wanted for use.

BASIL.—There are about twenty different species of Basil, but only two are cultivated in our gardens for domestic purposes, viz.: the sweet or common (*Ocimum basilicum*) which grows to the height of a foot or more, and the *O. minimum*, or least, which seldom attains more than six or eight inches. They are both annuals, natives of India, and consequently tender. The former was introduced in 1548, and the latter in 1573. The generic name, according to Mathioli, is derived from the Greek word *ozo*, to smell, although others think it was named after Ocymus, who first ordained the combats in honour of Pallas. It was also called *Basilicum*, and hence the latter name is by our modern botanists referred to the common species. The whole genus appears to have been held in great abhorrence by many of the ancients. An opinion generally prevailed, that if pounded and put under a stone, it would breed serpents. Chrysippus condemned it 200 years before the christian era, as being hurtful both to the sight and to the intellects. Hollerus related that an Italian had a scorpion bred in his brain, by only repeatedly smelling of Basil. The Africans believed that if any per-

son were stung by a scorpion on the same day that he had eaten basil, he could not possibly survive. Diodorous thought that the eating of it would breed insects in the body. The Romans, according to Pliny, sowed the seeds with many bitter curses, treading them down with their feet, and praying to the gods that the seed might not vegetate, believing firmly that the more they were cursed, the better they would prosper. Many of the Roman physicians considered this herb to be valuable in medicine. Galen, a Greek writer on medicine, who lived about A. D. 103, says basil was eaten by many persons in his time; and Gerard remarks that "the smell of this plant is good for the heart and the head, that taketh away sorrowfulness which cometh of melancholie, and maketh a man merrie, and glad." Schroder, and other medical writers of later days give it the virtue of cleansing the lungs.

Culture.—In the end of March, sow the seeds in a slight hotbed, but if it be not convenient to make up a bed for the purpose, sow them in boxes or pans, and place them in a cucumber frame or a forcing-house. When the plants are grown a good size, expose them gradually to the open air. Afterwards take them up in little bunches of three or four together, with good balls, which is more to be recommended than taking them up singly, and transplant them in a warm south border of light rich earth, placing them in rows, allowing six inches both between the rows and from plant to plant. If the weather prove dry, give a little water, and they will soon take root and grow a good size. Persons having no other convenience may sow the seeds broadcast on a warm south border of light fine soil, and if the season prove favourable they will succeed pretty well, but they never attain any thing like the size of those treated on the other method.

BORAGE (*Borago officinalis*.)—The name of this plant is derived from *Cor*, heart, and *ago* to affect, on account of its supposed cordial qualities. It is generally believed to be indigenous, though some think it was originally brought from Aleppo. Parkinson, who died about 1640, states that it grew plentifully in Kent, in his day. The whole herb is succulent and very mucilaginous, having a peculiarly faint smell when bruised. It was formerly held in great esteem as a cordial; though now but little noticed for any thing but cool tankards, which supply a very pleasant summer drink. The young leaves may be used as a salad, and are considered very wholesome.

Culture.—It is an annual, and is raised from seeds, which may be sown in a light dry soil, from March to May, either broadcast, or in drills eight inches apart. Where they come up thick, let them be

thinned out to a proper distance. They will not bear transplanting, in consequence of having long tap roots, unless this operation be performed with great care while the plants are very young. If they be allowed to ripen and shed their seeds, an abundance of young plants will grow for a crop the following spring.

CAMOMILE, *Anthemis nobilis*.—The fabulous story of the origin of this plant is, that Anthemis, a virgin shepherdess, kept her flock near the cave where one of the Sybils delivered her oracles. Anthemis frequently assisted at these ceremonies, and being present when the fate of lovers was to be decided, was so frightened, by Arphoiles bursting abruptly into the cave to know his doom, that she died on the spot, and was instantly changed into the plant that bears her name. Botanists, however, both ancient and modern, derive its name from a more rational source, viz : Anthemon, a flower, because the plants are covered with flowers. The medicinal qualities of camomiles have long been known and appreciated, and, according to Pliny, the first person who appears to have recommended this herb as a medicine lived to a great age, without ever experiencing a day's illness. The common single camomiles are preferable as a medicine to the double flowers, having a greater quantity of the yellow Hinum, but the double ones are most esteemed as a marketable commodity. The leaves of the plant are commended, in preference to the blossoms, as a digestive, laxative, emollient, and diuretic medicine. The Romans dried and preserved both the flowers and leaves for medicinal purposes, and for the making of winter garlands. The powder of dried camomile-flowers was used in the time of Dioscorides as a cure for intermittent fevers. It is stated by Boerhaave, that the oil obtained from camomiles, made into pills with a little bread, and given two hours before meals, and after a considerable fasting, is a certain cure for worms. Although the flowers are considered tonic, carminative, and slightly anodyne, yet a strong infusion of them, taken in a warm state, operates as a powerful emetic.

Culture.—The single variety, although possessing stronger qualities, is but little cultivated. It is chiefly found in gravelly pastures and by road sides. Both the single and the double are perennials; they are propagated by dividing the roots, and planting them in small patches in March or April, about eight inches apart, in a light sandy soil. If the weather be dry, give a little water until they have rooted; they will then soon cover the whole bed, and produce an abundance of flowers for several months, in succession.

The flowers should be pulled from time to time as they make their appearance, fine days being always selected for the purpose, and the

flowers being perfectly dry. When gathered, lay them on a mat or sheet, and spread them out in the sun morning and evening. Never allow them to be exposed to wet or even to the mid-day sun, for they are liable to lose their virtues by the effect of the latter, and their colour by the former. When well dried, put them in paper bags, and shut them up in a dry but close drawer, until required for use.

CARAWAY, (*Carum Carui*.)—The name of this plant, according to Pliny, is derived from the country of which it is a native, viz. : Caria in Asia Minor. Dioscorides, physician to Anthony, who wrote on medicine and botany, about the beginning of the christian era, calls it *Carum* because the seeds were first brought from Caria. Our botanical catalogues mention it as a native of Britain. It certainly grows spontaneously and very freely in British soil, and as the Romans used much of it in their domestic cookery, it is possible they were the first who cultivated it in England. Whether they introduced it or found it growing wild in this country is uncertain.

Culture.—If the seed be sown in the autumn, it flowers and bears seed the following summer, but when sown in March or April, it does not bear seed till the summer of the second year. It requires sandy loam ; it is generally sown broadcast, and, when the plants are two or three inches high, they should be thinned out to six inches apart. No further trouble is then required than to keep them free from weeds. In gathering the seeds, pull up the plants altogether.

CHERVIL, (*Chærophyllum sativum*.)—The generic name of this plant is derived from *Chairo*, to rejoice, and *phyllon*, leaf ; from the cheerfulness it is supposed to produce in the minds of those who eat the leaves. It is annual, and generally considered a native of England, although some think it was introduced from the Austrian Netherlands. It is cultivated in our gardens for the sake of the young leaves, which are used both in soups and as a small salad, with mustard and cress. Pliny tell us that the Syrians cultivated it, and that they supposed it capable of eradicating chronic diseases. Dioscorides and Galen considered it good for the stomach, and for complaints of the liver. The roots of this herb were formerly eaten after the manner of parsnips.

Culture.—There is a curled variety, which is considered most valuable. Sow thinly broadcast in a warm border, about once a month, during the summer season. When the plants are two, three, or four inches high, the leaves may be gathered for use, by cutting the plants down altogether, as they will put forth again.

CLARY, (*Sálvia Sclàrea*) is a biennial plant, a native of Italy, whence it was introduced into England, in 1562. Occasionally it is

used in soups, though in our opinion the smell of it is not very pleasant. A very agreeable wine is made by boiling the flowering part of the stem with sugar at the time it is in full blow. It is considered a good medical herb.

Culture.—Sow the seeds in light soil, in an open part of the garden, any time about March or April. When the plants have attained the height of three or four inches, thin them out to six inches apart. Keep them free from weeds, and they will be fit for use in July.

CORIANDER (*Coriandrum sativum*) is an annual, a native of England. Its name is supposed to be derived from *Koris*, a bug, on account of the smell of the leaves of the plant. The seeds are used to conceal the taste of senna, and they prevent the griping occasioned by that medicine. They are also covered with sugar as a sweetmeat.

Culture.—Sow the seeds in March or April, in light soil, in any part of the garden, and nothing further will be required than to keep them free from weeds. The seeds will ripen about the end of August.

FENNEL, (*Anethum Fœniculum*.)—Probably the specific name of this plant is derived from *fœnum*, hay; because when withered and dried like hay, it was preserved in a similar manner for winter. It is a perennial, and according to our British botanists, indigenous to this country, growing in abundance about Feversham, in Kent, near Brighton, and in many other places, particularly near the sea-coast, a situation in which it appears most to delight. The French writers think it was originally brought from Syria; but we are inclined to consider it another variety called *Fœniculum dulce*, or Sweet Fennel, which is much cultivated in France and Italy under the name of *Finochio*. This has a thick stem, and, when earthed up and blanched like celery, eats very tender and crisp. This latter sort is now more generally cultivated, the leaves being used for fish and other purposes, in preference to the common, the quality of it being milder. Fennel is regarded as a very wholesome herb; every part of it agrees well with the stomach. It is used in broth to cleanse the blood, and to remove obstructions from the liver. The seed is an excellent carminative, and is recommended for those who are troubled with shortness of breath, or a wheezing occasioned by the stoppage of the lungs. The steam arising from the leaves in decoction strengthens the sight; the herb facilitates digestion when chewed; a decoction of it is useful in small pox and measles, and the roots boiled in wine are said to be good for the dropsy. Some of the ancient physicians thought it an excellent remedy for the venom of serpents and other reptiles. It was much used by the Romans for seasoning; even the bakers placed it in the oven under their bread to give it a pleasant flavour.

Culture.—Fennel is propagated both by seeds and a division of the roots; it will thrive in any soil or situation. The seeds may be sown in March or April.

ARTICLE V.

DUTCH MANAGEMENT OF WALL-TREES.

WILLOW, or Hazel-rods, about the thickness of a man's thumb, are peeled, and planted within a few inches of the foot of the wall, at the distance of eight inches from each other, and reaching to the top of the wall. Thin long laths of deal are laid across, and the rods are nailed to them, the lath being between the rods and the wall. A similar line of laths is placed along the foot of the willow rods. A few loops of iron are nailed into the wall, to prevent the frame work, if it may be so termed, from shifting. Then the branches of the fruit-trees are bound to each upright rod, by a string of Russia bass matting. In the ordinary English way of nailing the trees to the wall with selvages of cloth, more time is consumed. The fruit spur being kept close to the wall, and the fruit, swelling equally all round, presses against the wall, and that part becomes, what is called "wall-burnt." The wall is also injured by the nails, and on being removed again, the holes in which they had entered afford an admirable shelter for the nest and eggs of every insect that infests the trees.

Abridged from the Annual Register, for 1830, Art. Natural History, &c. page 510.

ARTICLE VI.

REMARKS ON THE VINE IN POTS.—BY MR. WM. GREY,

Gardener at Shotley-Grove, near Durham.

PERCEIVING that the cultivation of the vine in pots has become a matter of interest and inquiry among the readers of your *Register*, and that Mr. Stafford's account is very flattering on the subject, he having no doubt obtained from fourteen to twenty good bunches of fruit annually from a vine in a pot,—permit me to offer a few remarks to your numerous readers. I have given a fair and impartial trial to the few vines I had in pots and tubs, and differing in opinion from Mr. Stafford and the High-Sheriff's gardener, I hope they will excuse me if I honestly state the nature of my success. Were all writers to give a just account of the experiments they make, be the re-

sult good or bad, many would be saved from falling into error, and from incurring serious expenses. I potted my vines in a turf soil, got from a sheep pasture, which was very rich, free and light. I kept them in a vinery where the vines were trained to the rafters, and watered them with liquid manure of sheep droppings put in a large tub of soft water. In winter, I plunged them in saw-dust, to prevent the frost injuring the roots. In the middle of February, the pots being matted with roots, I put them in tubs, of fifteen inches diameter, and having placed them in the greenhouse till every eye was swelled ready to push into leaf, I then removed them to the vinery, in a heat of seventy degrees. Some of them bore from four to six weak bunches, the berries set in an irregular manner, and, when ripe, they were small in size, and insipid in flavour. I gave them a trial during the third and fourth season, but finding my success decline on every occasion I laid them aside, and relinquished all hopes of having good fruit from vines in pots. It is obvious that as the fruit matures the pots are filled with roots, and require to be watered sometimes twice a day, in bright sun-shine, which spoils the flavour of the fruit and keeps the wood in a soft spongy state, for it never cuts solid and hard like well ripened wood. In pruning, the wood was full of heart, and there was a black tainted seam in the centre, caused no doubt by the application of so much water. M. D. must, therefore, recollect, if he build a house to cultivate vines in pots, to save the trouble and expense of making a border, that before two seasons elapse he will find, from the attention and trouble he will have in watering, that he is making a border every day all the season. The vine is a plant of free rambling growth, and it is as much against its nature to be confined in a pot, as for a man in sound reason to have a strait-jacket put upon him. I conceive it to be impossible for vines to produce fruit in the same perfection in pots as they will produce it in a vinery planted on a well prepared border. The vine differs in habit from almost any other fruit-tree. If the wood of a fig, orange, peach, apricot, plumb, pear, or any other tree be very luxuriant the tree is not so fruitful as those of the same sort which are of humbler growth. The case, however, is otherwise with the pines, for they require a very rich prepared border, and the stronger the young wood is, the larger will be the bunches, and the berries will swell to a great size, if they be properly managed.

Let me here give a brief account of my method of treating vines in a regular vinery. I lay no more young wood in than is wanted for fruit the next season, and when coming in bloom, I give little

air and keep a high moist heat, so that all the berries may set at one time. For when the house is cool, the shoulders of the bunches, being nearer the glass, frequently set before the lower part of the bunch, which generally shrivel, when swelling off, and greatly disfigure the crop. By the time the berries are set, the vines have made what length of wood I want for the ensuing year. I then stop all the shoots, three or four eyes above where I intend to cut, leaving the laterals at every eye, stopping them as they advance. The shoots whereon is the fruit, if not wanted for wood, I immediately stop two eyes above the bunch, and leave but one bunch on every shoot. By thus stopping, and by pinching off the end, the sap flows to the berries and swells them to a great size, before they stand to form the seed or stone. I thin them as soon as they are the size of mustard-seed, and keep pinching off the shoots an eye above the former stopping, as they push forth. I am always gratified with from twenty to thirty good bunches on a vine, having well swelled large berries, and I seldom or never have a shrivelled berry in any of my crops. Should any of your readers wish, I will with pleasure give a further detail.

WILLIAM GREY.

ARTICLE VII.—ADDITIONAL REMARKS ON THE STRAWBERRY,

BY H. BROOKE, ESQ.

THE runners should be planted in a moderately stiff soil, in August, during showery weather, in moist and open situations, and as near to water as may be convenient, either in beds of three rows, &c. &c. as recommended p. 250. If the soil be sandy or gravelly, a soft loamy earth ought to be added, to make it more retentive of moisture, and to prevent the scorching of the blossoms and fruit in very hot and dry seasons. From March to the end of fruiting time, the beds and rows should have an embankment of earth at their sides and ends, three inches high, taken from the alleys, to retain copious waterings and heavy rains. Plenty of water in the absence of rain, ought to be sprinkled every other day over the plants from a garden-engine, or syringe, or through the rose of a large watering-pot, from the first of May to the end of fruiting time, to set the blossoms, and to swell the fruit. A row of Jerusalem Artichokes may be planted in October, in light and rich ground, three feet from, and on the south side of, a plantation of such strawberries as require shade from a scorching sun; namely, Bartlett's Nonsuch. A screen of this sort would be of use, in hot and dry seasons, to all other strawberries, and particularly to those growing where the soil is sandy or gravelly, as well as to all seed and nursery beds. The artichokes should be earthed up like the potatoe, when they are a foot high.





CENOTHERA TENELLA *tenuifolia*.

FLORICULTURE.

ARTICLE VIII.—HISTORY AND INTRODUCTION OF THE
ÆNOTHERA TENELLA TENUIFOLIA,*With some Observations on the Culture and Propagation of the Genus Ænothëra.*

WHEN a little purple-flowered Evening Primrose was introduced some years ago from Chile, it was immediately recognised as the one called *Æ. tenella*, by the Spanish botanist Cavanilles. When grown in very poor soil, it had a simple stem, terminated by a few small axillary blossoms; but being planted in the richly cultivated gardens round London, it branched, and acquired greater vigour, putting forth longer and broader leaves, so that it was scarcely identified as the poor stranger so lately received. In a while it was neglected, its novelty being gone, and its flowers being rather deficient as to size. Hence the little *Ænothëra tenella* was only found in botanical collections. The collectors, who went out to Chile and the islands of the Pacific, with Capt. Beechey, returned in 1829, and Mr. Lambert procured from them, among other things, specimens of another Evening Primrose, the *Æ. tenuifolia*, upon which ripe seeds were found. These being sown produced the plant now figured, which is, so far as gardens are concerned, a very different plant, but which in the eye of a botanist, can hardly be considered distinct. It differs from *Æ. tenella* in having longer and more channelled leaves, with much larger and far more shewy flowers. For while in *Æ. tenella* the flowers are half hidden by the leaves, in the *Æ. tenuifolia* the leaves can scarcely be discovered for the flowers.—J. LINDLEY.*

Culture of the Genus.—The name *Ænothëra*, is derived from *Oinos*, wine, and *thera*, a catching, because the roots are said to smell like wine, and the ancients supposed that, when mixed with drink, they possessed the power of calming the most ferocious animals. They are also said to allay intoxication. It is, however, doubtful whether our *Ænothëra* is the real genus to which Theophrastus applied the name. Most of the *Annual Species* thrive and flower best in poor and gravelly soil, but they will grow rampant and strong in rich soil, though their flowers neither possess that degree of beauty nor can the permanence of the colour be relied upon so much as when grown in poor land. Perhaps none shew marks of

* Botanical Register.

degeneracy sooner than the *Œ. bifrons*; while the *Œ. sinuata*, and *tetraptera* may be considered exceptions, for they appear to flower better if grown in a light middling rich mould. The *Œ. viminea* comes into flower about the end of April, if planted on dry situations, but its time of flowering is then shorter than when planted in a damper place. All the purple-flowering annual species as *Œ. decumbens*, *quadrivulnera*, *purpurea*, *viminea*, *Romanzovii*, *Lindleyana*, *tenuifolia*, &c. when cultivated in a patch, in a large garden pot filled with poor soil, will flower in much greater perfection than in the open border, yet their flowering season is of much shorter duration. They are perfectly simple in their culture, merely requiring to be sown in the border, or in the pot where they are intended to flower. In every other respect the treatment is like other hardy annuals.

Biennial Species.—Those of biennial duration are all hardy, with the exception of *Œ. nocturna*, and *villosa*, which were introduced from the Cape of Good Hope, and consequently require the shelter of the greenhouse. The roots of *Œ. biennis* are eaten in Germany, and in some parts of France. They have a nutty flavour, but are very inferior to the rampion. They are both stewed, and eaten raw in salads, with mustard, oil, salt, and pepper, like celery. Lippold says they have been long used as a culinary vegetable, under the name of German Rampion. It was from this species that the genus took the name of *Evening Primrose*, because its flowers seldom expand till towards six or seven o'clock in the evening. A few other species evince the same disposition, but the generality of them including annuals, biennials, and perennials, are open all day, making, at the time of flowering, a beautiful show in the borders. The mode in which the flowers open is highly curious. The segments of the calyx first begin to separate at the bottom, and to expose the inclosed corolla, while at the top it is held tightly together by the hooks at the end of the calyx. In about a quarter of an hour, the flower obtains sufficient strength to unhook the calyx at the top, which being accomplished, the expansion proceeds rapidly for about five minutes, when it again slackens, as though to recruit its strength, previously to spreading out quite flat.

Perennial Species.—All these are hardy, except *Œ. rosea*, *acaulis cæspitosa* and *anisoloba*, which require slightly sheltering. The first of these should be grown in peat and loam, in a pot, which, during winter, should be sheltered in a frame, though it may be turned out in the borders after the frosts are over. The *Œ. acaulis* is a native of Chile, where it is very common in waste places, and ac-

According to Ruiz and Pavon it is there administered in the form of infusion for medical purposes. It will grow well in common poor soil, and requires similar treatment to the last. The *Æ. cæspitosa* often perishes from too much moisture; and to prevent this, all the damp soil should be removed from the roots, on the approach of winter, say about the end of October, and there should be put in place of it a quantity of dry soil. The plant may then be covered with dry saw-dust, and a pot set over it with the hole well stopped, to prevent the entrance of rain or snow. Let it remain there until the beginning or middle of March; and then take away the pot and saw-dust, and put some good fresh earth about the roots. Place a hand-glass over the plant for a few days, until it will bear exposure. *To Propagate this Species*, take up the plants in the beginning of October, shake the soil from them, and break the roots into small pieces about one inch and a half long. Plant about six of these pieces in each forty-eight sized pot, filled with good light soil, and made rather dry. Set them in a frame, and give them no water through the winter. In March begin to water them, very gently at the first, increasing the quantity as they grow, and they will soon become fine plants. The *Æ. anisoloba* is a fine shewy plant, but unless well protected through the winter, after the same manner as *Æ. cæspitosa*, it seldom survives. It thrives best in peat and loam. If the seeds be sown in the beginning of March on a hotbed, and the plants be taken up with a trowel in bunches, and placed in the borders at the end of April, they will flower in June the first year, and produce plenty of seeds.

All the other perennials are very easy of culture, and with the exception of *Æ. fruticosa*, *macrocarpa*, *missourénsis pallida*, *glauca*, and *Fraseri*, will grow in any common soil. These six species, however, require to be planted in sandy peat earth. They may all be increased by cuttings, taken off in May, and planted in light rich soil under a hand-glass, by seeds, and by division of the roots, but in this last method care must be taken not to mutilate them too much, or they will not grow healthy.

ARTICLE IX.

CULTURE OF THE NATURAL ORDER ERICÆ.—By T. K. S.

THESE beautiful plants were separated into two orders by Jussieu, who distinguished *Rhodoracæ*, and *Ericæ* by the mode in which the capsules or fruit burst, a character which is now but little esteemed.

They grow in great abundance at the Cape of Good Hope, covering immense tracts of land; they are common in North and South America, and in Europe, while in Northern Asia and India they are not so common, and in Australasia they are almost unknown, though they have their place supplied by Epacrideæ. As to their properties, some are found to be astringent, as *Azalea procumbens*, *Rhododendron ferrugineum*, and *Ledum palustre*. Others are diuretic, as *Arctostaphylos*, *Uva Ursi*, or *Bearsgrape*, the powdered leaves of which, taken in the dose of from a scruple to a dram, two or three times a day, have been found an excellent medicine for Calculus. The berries of the succulent-fruited kinds are usually grateful, and sometimes taken as food, such as the *Gaultheria Shallon*, and *procumbens*, *Brossæa coccinea*, and *Arctostaphylos alpina*. In the Island of Corsica, an agreeable wine is said to be made from the berries of *Arbutus Unedo*.

Gaultheria procumbens possesses stimulating and Anodyne properties. In North America, an infusion of it is used as tea, and an infusion of the berries in brandy is taken in small quantities, in the same manner as common bitters. Extract of *Chimaphila umbellata*. in the form of pills, in doses of five scruples a day, has been found successful in cases of dropsy. The fruit of *Arbutus Unedo*, taken in too great a quantity, is said to be Narcotic, and there is no doubt but a similar quality exists in several other plants of this order. *Rhododendron ponticum* and *maximum*, *Kalmia latifolia*, and some others, are well known to be venomous. The honey which poisoned some of the soldiers, in the retreat of the ten thousand through Pontus, as related by Xenophon in his *Memorabilia*, was gathered by bees from the flowers of *Azalea pontica*. The shoots of *Andromeda ovalifolia* poison goats in Nipal. Dr. Horsfield, however, says that a very volatile heating oil, with a peculiar odour, used by the Javanese in rheumatic affections, is obtained from a species of *Andromeda*. Dr. Barton states, in the American Philosophical Transactions, that in the autumn of 1790, the honey collected near Philadelphia, from the *Kalmia latifolia*, proved fatal to many. Yet the honey collected from our common heath appears to possess no such pernicious qualities. An infusion of *Rhododendron* is said to be used in America in cases of chronic rheumatism, but it appears to be a dangerous remedy for those who are unskilled in the use of it.

This Order contains twenty-eight genera, and upwards of a thousand species, the greater part of which are greenhouse plants, although nearly three hundred are hardy, growing in their native woods, from six inches high to upwards of eighty feet. They are all

very deserving of extensive cultivation. The Genera are divided into four sections or divisions.

SECTION 1, *Ericæ veræ*, contains 15 Genera.

Arctostáphylos	Lyònia	Sympie'za
Arbùtus	Mylocáryum	Erica
Gaulthèria	Cléthra	Menzièsia.
Enkiánthus	Cyrilla	
Andrómeda	Elliottia	
Brossæa	Blaèria	

SECTION 2nd. *Monotrôpeæ*, contains one Genus.

Monotropa.

SECTION 3rd. *Pyrôleæ*, contains two Genera.

Py'rola, and *Chimáphila*.

SECTION 4th. *Rhodoræeæ*, contains ten Genera.

Kálmia	Rhododéndron	Chamælédon
Epig'æa	Azálea	Lédum
Rhodòra	Ammy'rsine	Bejària
		Itea.

Arctostaphylos, (*Arktos*, bear, *staphyle*, a grape.)—This genus contains but two species, both of which are natives of Britain. The Bearsgrape, *A. Uva Ursi*, grows plentifully on our moors, but the other species (*alpina*) is chiefly confined to the mountains of Scotland, and can only be made to thrive in our gardens by being planted in moist shady situations. They both require sandy peat earth, and are propagated by layers with very little trouble.

Arbutus.—Strawberry tree, (*Ar boise*, austere bush, from the roughness of the fruit.) Amongst the plants of this beautiful genus, one species, the *A. Unedo*, is a native of Britain, being found on the rocks of Ireland. It is of course perfectly hardy, and is well adapted, together with the six other varieties, to plant in a conspicuous situation in the shrubbery, or to stand singly on a lawn, where, if the situation be warm, it makes a very pretty appearance when covered with ripe fruit. It will thrive in any common soil. The *Andrachne* also is pretty hardy, but will not easily bear our severe frosts whilst young. This should be kept four or five years under cover, in pots, before it is turned into the open border, and then it must be planted in sandy peat in a warm situation, where the soil is not liable to become very wet. It seldom or ever ripens its fruit in this country, but it is said to resemble the *Unedo* in shape, and to be about the size of a raspberry. The only means we have of propagating it is by grafting it on the common sort. The *A. tomentosa h'ybrida*, *Milleri*, *proceva*, and *Menziesii*, will thrive in almost any situation,

planted in sandy loam and peat with the exception of *A. hybrida*, which should be planted in peat. They are all readily increased by layers. The *mucronata*, *canariensis*, *serratifolia* *laurifolia*, *densiflora*, *phillyræfolia*, and *pumila*, require the shelter of the greenhouse or frame, and should be potted in sandy peat; they may be propagated by layers and cuttings. The *hybrida* much resembles *Andrachne*, but is handsomer than either that or the *Unedo* both in its foliage and flowers; it flowers early in the spring, and has a smell resembling honey,

Gaulthéria (M. Gauthier, M. D. a French writer.) The species of the genus are ornamental and well deserve cultivation. The *G. Shallon*, though small in this country, grows to a good size in its native woods; it is hardy and grows best in rather shady situations. See Vol. 1, pp. 23 and 179. The *procumbens* is an evergreen creeper, and may be readily propagated by suckers, whilst the *shallon* will require to be layed. There are two greenhouse species, the *fragrans* and *antipoda*, which propagate freely by layers or cuttings, planted in sand under a bell-glass, and plunged in a slight heat. They all require planting in sandy peat earth.

Enkianthus, (*Egkuos*, pregnant, *anthos*, flower.) These are elegant little bushes, generally considered greenhouse, but they are more hardy than many of our greenhouse plants. They will not bear the cold of our winters, out of doors, but would do very well sheltered in a frame or pit. They are propagated by ripened cuttings, planted in sand under a bell-glass without heat, and they strike without much difficulty. The best soil for them is sandy loam and peat. Care is required not to over water them when not in a growing state.

Andromeda, (name derived from the fabled virgin of that name.) It may not be amiss to introduce here an extract from Smith's translation of *Linneus's Tour in Lapland*, in which he states the reasons for applying to it the name *Andromeda*. "*Andromeda polifolia*, says he, was now, June 12th, in its highest beauty, decorating the marshy grounds in a most agreeable manner. The flowers are quite blood red before they expand, but, when full grown, the corolla is of a flesh colour. Scarcely any painter's art can so happily imitate the beauty of a fine female complexion; still less could any artificial colour upon the face itself bear a comparison with this lovely blossom. As I contemplated it, I could not help thinking of *Andromeda*, as described by the poets; and the more I meditated upon their descriptions, the more applicable they seemed to the little plant before me. So that if these writers had had it in view, they could scarcely have

contrived a more apposite fable. Andromeda is represented by them as a virgin of most exquisite and unrivalled charms; but these charms remain in perfection only so long as she retains her virgin purity. The same is also applicable to the plant now preparing to celebrate its nuptials. This plant is always fixed on some little turfy hillock, in the midst of the swamps, as Andromeda herself was chained to a rock in the sea, which bathed her feet, as the fresh water does the roots of the plant. Dragons and venomous serpents surrounded her, as toads and other reptiles frequent the abode of her vegetable ressembler, and, when they pair in the spring, throw mud and water over its leaves and branches. As the distressed virgin cast down her blushing face through excessive affliction, so does the rosy-coloured flower hang its head, growing paler and paler till it withers away." "At length," says he in his *Flora Lapponica*, "comes Perseus in the shape of summer, dries up the surrounding water, and destroys the monsters, rendering the damsel a fruitful mother, who then carries her head (the Capsule) erect."

The greater part of the species are hardy, and require to be grown more or less in a damp shady situation, for those species, which do not naturally grow in bogs, chiefly inhabit the mountains, where the air is considerably moister than in the plains. They thrive best in sandy peat, and are generally increased by layers, although some few, as the *A. arborea*, &c. bear plenty of seeds, and others as *A. Catesbæi*, *axillaris*, and *axillaris longifolia*, throw up abundance of suckers. The seeds should be sown in pots or in a frame, and be very thinly covered with soil, in consequence of the smallness of the seeds. When about an inch high, plant them out thinly, either in pots or on a bed, which must be covered to prevent them from being dashed with wet. When they are large enough, plant them in the open ground, which should always be done in spring, or the frosts and worms sometimes throw them quite out of the ground during winter. The *A. tetragona*, and *hypnoides*, should be sheltered during winter, either in a pit or frame or by a hand-glass, and mats should be placed over them on the border, so as to preserve them from the severity of the weather. The *A. japonica*, *ovalifolia*, and *sinensis*, should be kept in pots, and preserved in the greenhouse during winter. They might be plunged in a shady border in May, and taken in again in October. The *A. jamaicensis*, *fasciculata*, *buxifolia*, and *rubiginosa*, are stove plants, but may be set out of doors in summer, or plunged after the same manner as the last. They are increased by cuttings, taken off when young, and planted in sand under a bell-glass.

Brossæa, (in honour of G. de la Brosse, physician to Louis XIII.)

This genus contains but one species, a native of South America, and consequently an inhabitant of our stoves. It thrives in a mixture of sandy loam and peat,---young cuttings will root, planted in sand under a bell-glass, and plunged in a little heat.

Lyonia, (I Lyon, an American collector of plants.) All the species are perfectly hardy, they require to be grown in sandy peat, are propagated by layers, and in all respects may be treated like the hardy *Andromedas*.

Mylocaryum, or Buck-wheat Tree, (*Myle*, mill, *Karyon*, nut ; four winged seeds.) This genus contains only one species, the *M. ligustrinum*, which has much of the habit of the *Clethra* ; it grows about eight feet high, and requires the shelter of a conservatory or pit. It is propagated by layers or cuttings, planted in sand under a bell-glass, and thrives in peat and loam.

Clethra, (*Klethra*, the Greek name for the alder.) The ferruginea, arborea, arborea minor, arborea variegata, are well adapted for the greenhouse or conservatory. They grow and flower well in a mixture of sandy loam and peat. All the hardy kinds, however, succeed best in peat, and may be planted amongst the other plants on the American border. The *C. tinifolia* is a stove plant, and should be potted in sandy loam. The *C. ferrugineum*, and the hardy species, may be propagated by layers, and the stove and greenhouse sorts by ripened cuttings, planted in sand under a bell or hand-glass. Or they may be raised from seeds.

Cyrilla, (D. Cyrillo, M. D. professor of Botany at Naples.) The two species of this genus are very pretty greenhouse shrubs, growing about six feet high ; they will thrive in equal parts of peat and loam, and may be propagated by cuttings, planted in sand under a hand or bell-glass, but do not root freely.

Elliottia, (Stephen Elliott, a North American botanist.) There is but one species belonging to this genus, which is well worthy of cultivation. It is a native of Georgia, it grows in sandy peat, and is increased by layers.

NATURAL HISTORY.

ARTICLE X.—SCIENCE OF BOTANY CONTINUED.

BY MR. F. F. ASHFORD.

ON LILACEOUS AND CRUCIFORM FLOWERS.

I THINK the idea is excellent of amusing the reader, and exercising his attention upon such agreeable and varied objects as plants. Perhaps I should not have ventured so far as to propose it myself, had I not been convinced that, at all times of life, the study of nature abates the taste for frivolous amusements, assuages the tumult of the passions, and provides the mind with an object worthy of its contemplation. Besides, to be merely acquainted with plants by sight, and only to know their names, may be too trifling an attainment for many of your readers. It may be presumed, that they would not be satisfied with so small a share of knowledge, and I propose that they should possess higher notions of the vegetable structure or organization of plants. I would have them gain some real information, though they should only take a few steps in the investigation of the richest and most beautiful of the three kingdoms of nature.

A perfect plant is composed of a root and a stem, with its branches of leaves, flower and fruit. This at least is sufficiently known already to understand the terms; but one principal part requires examining now at large, I mean the fructification, that is the flower and fruit. Let me begin with the flower, which first appears. In this part nature has inclosed the summary of her work, by this she perpetuates it, and this is commonly the most brilliant part of the vegetable, and always least liable to variations.

Take a lily, as an example of the Lilaceous tribe, and dissect it. Before it opens, you see at the top of the stem an oblong greenish bud, which grows whiter the nearer it approaches the period of opening, and when it is quite opened, you perceive that the white cover assumes the form of a basin or vase, divided into several segments. This is called the corolla, and when it withers, it falls or separates into six distinct pieces, which are called petals, and consequently it is a pentapetalous, or a polypetalous corolla. Exactly in the middle of the corolla, a sort of little column rises from the bottom, pointing directly upwards. This, taken as a whole, is called the pistillum, consisting of the parts called the germ style, and stigma. Between the pistil and the corolla, six other bodies rise entirely separate from each other, which are the stamens, each consisting of two parts, viz.

the filament and anthera. Each anther is a vessel which opens when ripe, and throws out a yellow dust, having a strong smell, called pollen or farina.

Such is the general analysis of the parts which constitute a flower. As the corolla fades and falls, the germ increases and becomes an oblong triangular capsule, within which are flat seeds in three cells. This capsule, considered as the cover of the seeds, takes the name of pericarp.

The parts here mentioned are found in the flowers of most other plants, but in different proportions, situations, and numbers. By the analogy of these parts, and their different combinations, the families of the vegetable kingdom are determined. These analogies are connected with others in those parts of the plant, which seem to have no relation to them. For instance, this number of six stamens, sometimes only three, of eight petals, or divisions of the corolla, and that triangular form of the germ, with its three cells, determine the lilaceous tribe; and in all this tribe, which is very numerous, the roots are bulbs of some sort or other. That of the lily is squamose, or composed of scales; in the asphodel there is a number of oblong solid bulbs connected together; in the crocus and saffron there are two bulbs, one over the other; in the colchicum they are placed side by side. The calyx, which accompanies most other flowers, is wanting in the greater part of the lilaceous tribe, as the Tulips, Hyacinth, Narcissus, and even in the onion, leek, garlic, &c. which are also lilaceous, though at first sight they appear very different. It will also be perceived, that in the whole tribe, the stems are simple and unbranched, the leaves entire, being never cut or divided, observations which will confirm the analogy of the flower and fruit in this family by that of the other parts of the plant. If some attention be bestowed upon these particulars, and they become familiar by frequent observations, our juvenile readers will soon be able to determine, on an attentive and continued inspection of a plant, whether it be of the lilaceous tribe or not, without even knowing the name of the said plant. They will see, that this is not a mere labour of the memory, but the study of observations and facts truly worthy of a naturalist.

ON CRUCIFORM FLOWERS.

Since the first lineaments of plants are so well understood, though so slightly marked, that we can already distinguish the lilaceous family by their hair, and since our botanists amuse themselves with corolla and petals, I shall present to the reader another tribe, upon which he may again exercise his knowledge. The difficulty, I must

own, will be rather greater, because the flowers are much smaller, and the foliage more varied, but the pleasure on my part and on that of the reader, will I hope be the same. I trust he will have as much delight in following this flowery path, as I enjoy in tracing it out for him.

When the first rays of spring enlighten our progress by showing us, in the gardens, the Hyacinth, Tulip, Narcissus, Jonquil, and Lily of the valley, the analysis of which are already known, other flowers soon catch our attention, and require examination, such as stocks and rockets. Whenever these are found double, we must not meddle with them, for they are disfigured, and nature will no longer be found amongst them. She refuses to produce any thing from monsters thus mutilated, for if the most brilliant part of the flower, the corolla, be multiplied, it is at the expence of the more essential parts, which disappear under this addition of brilliancy.

Take then a single stock Gilliflower, as an example, and if you dissect it, an exterior part will immediately be perceived, which was wanting in the lilaceous flowers, viz. the calyx. This consists of four leaflets or folioles, which are commonly unequal by pairs, that is, two leaflets opposite and equal of a smaller size, the other two also opposite and equal, but larger, especially towards the bottom, where they are so rounded as to exhibit every sensible protuberance on the outside.

The corolla is also composed of four petals, I say nothing of their colour, because that forms no part of their character. Each of these is fastened to the receptacle by a narrow pale part called *unguis*, or claw, and this spreads out over the top of the calyx into a large flat coloured part called *lamina*, or the border.

In the centre of the corolla is one pistil, long and cylindric, or nearly so, chiefly composed of a germ ending in a very short style, and that is terminated by an oblong stigma, which is bifid, that is, divided into two parts.

I must now speak of the stamens, which are six in number, the same as in the lily tribe, but they are not all equal as in the former case. It will be perceived that there are two opposite to each other, which are sensibly shorter than the other four which separate them, and which are also separate from each other by pairs. To finish the history of the stock, we must not abandon it as soon as we have analyzed the flower, but wait till the corolla withers and falls, which happens very soon. We must then remark what becomes of the pistil, composed, as I observed before, of germ, style and stigma. The germ grows considerably in length, and thickens a little as the

fruit ripens, at which time it becomes a kind of flat pod, called a silique, composed of two valves, each covering a small cell, and the cells are separated by a thin partition. When the seed is ripe, the valves open from the bottom upwards, to give it passage, and remain fast to the stigma at top. The flat round seed are ranged along each side of the partition, and fastened alternately on each side, by a short pedicle, to the sutures or edge of the partition. The great number of species in this class (15) has determined botanists to divide it into two sections, in which the flowers are perfectly alike, but the fruits, pericarps, or seed vessels, are sensibly different.

The first order contains the cruciform flowers, with a silique or pod, such as the stock *Cheiranthus cherii*, and the like. The second contains those whose seed vessel is a silicle, that is a small and very short pod, almost as wide as it is long, and differently divided within, as of Whitlow grass, Mithridate Mustard, Bastard-cress &c. in the fields, and Scurry-grass, Horse radish, Candy-tuft, and Honesty in gardens. If none of these are known, I presume that at least an acquaintance is formed with the Shepherd's purse, so common a weed in kitchen gardens. The Shepherd's purse is of the cruciform tribe, and the silicle branch of it, and the form of the seed is triangular.

It is now time to breathe, and I am very much afraid of trespassing too much on your pages. It is necessary, however, to give the essential characters of the numerous tribe of cruciform flowers. I hope this description, which may be difficult to be understood, will become more intelligible when we have gone over it with some attention, having, at the same time, the object before our eyes. I will, therefore, only offer one hint more, viz. that in this class and many others, the flowers will often be found much smaller than those of the stock, and sometimes so small that we cannot examine their parts without the assistance of a glass, an instrument without which a botanist cannot go on any more than without a lancet, a needle, and a pair of small sharp scissors.

ARTICLE XI.—PECULIARITIES OF PLANTS,

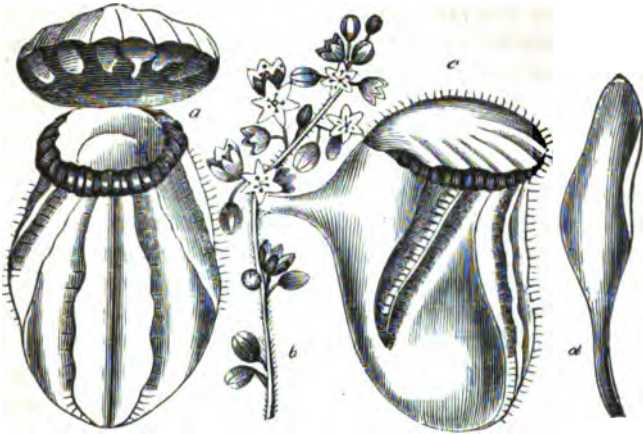
With some Observations on those which possess, or are supposed to possess the power to entrap Insects.

BY JOSEPH PAXTON, F. L. S. E. S. &c. (Continued from p. 313.)

IN the article on this subject, last month, an error escaped our notice in page 313, the second line from the top, where it is stated that Dr. Jack found the bottoms of the pitchers beautifully punctured, as if by the mouths of *insects*. It should have been, by the mouths of

vessels, alluding to the spiral vessels. We have since that time minutely examined several pitchers, from plants in our possession, and we found the whole of the lower and larger part of the pitcher thickly covered with small black spots; whether these are the mouths of vessels we cannot say. The next plant in order is the *Cephalotus follicularis*, Follicled *Cephalotus*, or New Holland Pitcher Plant.

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The root is a perennial belonging to the natural order *Rosaceæ*, according to Dr. Hooker, although Mr. Lindley, in his introduction to the *Natural System*, places it doubtfully under *Sanguisorbeæ*, stating that its proper station is by no means well ascertained, because of its seeds being unknown. This plant is remarkable for the presence of flat leaves, (*d*) of an elliptical form amongst the pitchers (*a c*). The form of these latter is ovatus, or something pitcher shaped; they are green, tinged with purple, and beautifully fringed with hairs. The inside, which contains a sweetish watery fluid, and entraps many insects, especially ants, is dark purple. The mouth is contracted, and is crested with rings of dark purple colour. In regard to the organization and position of its pitchers, the plant may be compared to *Sarracenia*. M. Labillardiere discovered it in "Leuins Land," and figured and described it in his specimens of the plants of New Holland. Mr. Browne, during his voyage with Captain Flinders, detected it on nearly the same line of coast, viz. ; in the neighbourhood of King George's Sound.* Not being in possession of this plant, we are unable to speak from experience, and have copied from Dr. Hooker what is here stated. Several trees and climbing plants

* Botanical Magazine.

have similar appendages attached to the leaves, but are entirely destitute of the lid. For instance, in the species of *Dischridia*, which are climbing plants, the pitchers are in the form of bags, and of a greenish colour; they hang in bunches from the slender stems, and the use of them, as Dr. Wallick remarks, is "to form reservoirs of nutriment, from which the roots emitted by the stem, and constantly found ramifying within them, absorb food for the general support of the individual. He says that in this case they are necessary, on account of their long slender twining stem being too narrow a channel of supply from the subterranean roots to the leaves. The *Macgravia* also have little pitchers occupying the place of bractæ, which either hang down or stand erect among the flowers; but these, as well as the last, although they contain considerable moisture, have no openings wherein insects might enter. We shall leave them as a subject for future observation. Amongst these hollow leaved plants may be placed the *Dipsacus fullonum*, which forms an axillæ of the leaves, a kind of basin, usually containing a quantity of water, which becomes the grave of numerous insects particularly flies. This water had once the reputation of being a cosmetic, or a beautifier of the skin, but it is now little regarded,

ARTICLE XII.

COLLECTIONS AND RECOLLECTIONS.

REAPING UNRIPE WHEAT.—I beg to inform C.C.C.C. page 273, that cutting unripe wheat has been practised with success in our part of the country (North Wilts). Wheat cut about one week, or eight days before it is ripe, is a great deal better in quality than when it is allowed to be fully ripe. The method adopted is, to let the wheat lay in *grit* about one day after it is cut, and then to tie it up in very small sheaves; or the wheat, not getting dry in the middle of the sheaves, will turn fusty. By adopting this plan the wheat will be found, at thrashing, to be a great deal plumper in the corn, of a better colour, and less subject to the attacks of the weevil. J. K.

PLANTING AND PRUNING FOREST TREES.—I am a very old planter, one of the oldest, I believe, in Hampshire, and I challenge any of the King's planters in the New Forest, for success and good management. I never prune my trees at all, but leave them to nature. My plan is first, to trench and drain the ground, which is to be planted. I then plant the trees pretty close, after which nothing more is required than to attend carefully to thinning out the nurses, when they become too rank.

AN OLD PLANTER.

HOREHOUND.—In the spring of 1830, having had occasion to burn some weeds in my garden, principally docks and nettles, I unintentionally left the ashes in the place where they were burnt, and, in the course of five months, I was surprised to find a young horehound plant growing out of the centre. How this happened, I am quite at a loss to determine, for no horehound, to the best of my knowledge, has ever grown there. Feeling a little interested in the discovery, I tried it again the following year, and the result was the same. I next made a fire of weeds of any kind, but was unsuccessful. In the spring of last year, I again tried the docks and nettles as before, and soon had a fine plant. I repeated the experiment in the autumn of last year, and now there is a fine plant springing up. Now, sir, I only tell you the facts, the reason I am entirely at a loss to explain, but perhaps some of your intelligent correspondents can throw some light on the subject. **CHARLES SAMUEL SMYTHE.**

THE HOLLY AS A HEDGE-PLANT.—It is well known, that the holly makes a very beautiful and durable hedge, but it is seldom used for that purpose, because of its slow growth. I have, however, seen it thrive with unusual rapidity, and the whole mystery appears to consist in the time of planting. Thousands of hollies are every year destroyed by transplanting them in winter; if removed at midsummer, they scarcely sustain a check. **W. W.**

USES OF THE HORSE-CHESNUT TREE.—Let me call your attention to a fact but little known, viz. that in Cashmere, where it is wild in the woods, the fruit of the horse-chesnut is used to feed pigs. The wood is also serviceable for turners and coopers, and sells well. These circumstances will tend much to encourage the planting of this beautiful tree. It thrives near water, and on wet soils. It has always been considered useless, and it was supposed that only deer would eat the fruit. I have tried pigs, and find they will eat it. **S.**

RUMEX ALPINUS, *Monks Rhubarb*, probably so called from its growing at One-Ash-Grange, near Monyash, Derbyshire, where it is said some Monks resided, and where it now grows in an uncultivated state. Parkinson, in his *Paradise in Sole*, published in 1656, gives a good print of it as garden Patience, or Monks Rhubarb. There is given with it *Rhaponticum Vevum*, of which last Dr. Matthew Lister sent to him a root, from abroad, which first grew with him, before it was ever seen or known in England. *Rumex Alpinus*, is only introduced into our British botany, by Hooker, in his *Brit. Flora*, published in 1830.

Specimens of each are in W. Watson's Bath Garden.

Bukewell, April 16th, 1833.

W. WATSON;

PART II.

REVIEWS AND EXTRACTS.

REVIEW.

ALPHABET OF BOTANY, FOR THE USE OF BEGINNERS.

BY JAS. RENNIE, ESQ. M. A.

*Author of Alphabet of Insects, Alphabet on Scientific Gardening, &c. Small 8vo.
123 Pages, and numerous Cuts.—1833. 2s. 6d.*

THIS Work, like the Alphabet of Insects, noticed page 275, is intended to assist those who commence the study of botany without any instructor, and it is well calculated to answer the end proposed. The technical terms are explained and simplified, and the elements of botany are so detailed and illustrated as to suit the most uninitiated. So soon as the student is sufficiently acquainted with the alphabet, we would recommend him, if practicable, to proceed to the study of Lindley's Introduction, noticed page 129. Should that be beyond his means, the Alphabet will supply him with a large portion of very useful knowledge not readily obtained, except at a much greater expense. A few extracts may suffice to shew the style and general character of the work. At page 4, speaking of the skin, or bark of plants, the author says, "in animals, the outer skin, which is raised up by a blister, has no more feeling than the nails or the hair, and is, therefore, intended to sheath and protect the more sensible parts beneath. In plants there is a similar outer skin, commonly termed the rind, intended no doubt, for a similar purpose, though this is not so well understood as in animals." Again, page 24, "it appears from experiments, that leaves perform some office similar to the lungs of animals, at least, when healthy and exposed to sunshine, that they exhale oxygen gas through the pores on their surface, and at night, or in cloudy weather, they exhale carbonic gas." At page 57, he remarks, "There is an obvious and well known proof, that plants live on water chiefly, if not altogether, derived from hyacinths and other bulbs placed in glasses, and supplied with water, in which they blow as well as in a garden. It is found, however, that they do not thrive unless the water be regularly changed, indicating that it is not the water alone, but something in the water which becomes exhausted. It has also been found by experiment, that distilled water will not support a healthy growth in plants, and most, if not all species, when planted in pure calcined sand, and watered with distilled water, quickly die, as they do when quite deprived of water. From chemical analysis and experiment, it appears that the chief matters taken up by plants, besides water, consist of carbonic acid gas and azote, together with a few salts, such as potash, and out of these and the hydrogen and oxygen of the water, all vegetable products seem to

be wholly or chiefly elaborated. It is proper to confess, however, that we are still much in the dark upon this interesting subject, it being extremely difficult, if not impossible, to trace the fluid taken up by a plant after it passes beyond the surface. At page 53, it is important to remark, that the pores of the spongelets or suckers will not admit any fluid much thicker than water, and, accordingly when plants are watered with the drainings of a farm-yard in an undiluted state, the pores of the spongelets are obstructed, and the plants are suffocated, or rather perish of famine in the midst of plenty. At page 69 he remarks, that it might be supposed, as plants seem to feed chiefly on carbon, that they would thrive well in smoke, or in an atmosphere of carbonic acid gas; but it is found not to be so, for the particles of carbon in smoke are too large to enter the pores, and too much undiluted carbonic gas gorges them, and they become brown, and die. Plants, it would appear then, are destined by providence to purify the air which is loaded with carbonic acid gas from the lungs of animals, and to give out a fresh supply of oxygen to replace what is taken up by the lungs. During the night, however, plants take up oxygen, and give out carbonic acid gas; and hence it is not proper to keep plants in a bed-room."

After treating on the external and internal organs, the classifications of Linnæus and Jussieu are simply explained; and the whole is closed with an index of the technical terms marked in notes at the bottom of the pages.

EXTRACTS.

HORTICULTURAL INTELLIGENCE.

TO PRODUCE ONIONS OF A LARGE SIZE—When the beds are formed by the usual method, tramp them heavily, and roll them firmly. On this compact surface, sow the seed, and cover it at the usual depth with a rich compost. The bulbs, instead of sinking, will spread superficially to a good size, and ripen earlier.

IRISH MODE OF OBTAINING EARLY CAULIFLOWERS.—Take your knife in one hand, and the plant when full grown in the other, cut upwards in a sloping direction, about two inches from the ground, till the blade reaches the middle of the stem. Then put a small bit of chip in the slit, to prevent the parts from uniting again, and raise the earth above the cut, pressing it very tightly round the plant, and treading it firmly to protect it from being broken by the wind. You may also make it more secure by tying the plant to a firm stake, or, which is still better, you may tie a strong shred of base-mat round the wound, and thus secure the plant to a sufficient stake, which will make the raising of the earth unnecessary. By this method the plant will be ready for use seven or eight days sooner. Instead of lime, gypsum may be used with much better effect, not only in this, but in other garden operations.

TO HAVE LARGE FLOWERS ON SPRING BROCCOLI.—In the month of September, begin at one side of the Broccoli plot, and open a trench parallel to the planted row. Then take up the plants from that row, one by one, with a good ball to each, and if it be very large let it be reduced, and the roots trimmed. Let some

of the under leaves also be taken off, and then lay the plants carefully in the new trench. Dig in the earth, and close it well, treading it firmly round the roots. Let the same operation be performed with respect to as many rows as you wish to transplant into the trenches to be vacated, placing them in a sloping direction. If possible, let the plot originally be laid out to face the south. The plants by receiving this check, will stand the frost better, and have larger flowers in the spring.

TO PREPARE VEGETABLE MOULD QUICKLY.—As early in November as the leaves of trees can be collected, let them be brought in a considerable quantity, into a close place, and dressed up there in the form of a hot-bed. Let this be well saturated with the drainings from the dung-heap, with suds from the wash-house, and with urine from the stable and cow-house, where this latter article can be procured. Let this bed or heap be covered and lined with fresh stable dung, to make it heat. When the heat is sufficiently subsided, let the leaves be uncovered and turned over, to mix the dry and the wet well together, and if moisture be required, let them have it of the same description, repeating the process till all be reduced to fine mould. This will be ready for use in two months from the time of collecting the leaves, and to prevent any waste of the liquid recommended, a layer of maiden earth, of two feet thick, should be made the substratum, which would receive any of the valuable liquid that would otherwise run to waste. Leaves of slow decomposition should be avoided, as those of the oak &c. which, however, are the best for retaining heat in hotbeds and pits. The leaves of Fir should also be avoided, but those of the Sycamore, Elm, Alder, Maple, and all the soft kinds are best suited for the purpose. This compost should be kept dry, in an airy place, and ridged up, so that the rain cannot wash out the salts with which it abounds.—*Doyle's Practical Gardening.*

ON SALT-PETRE AS A MANURE.—It should be sown on the land in March and April, in the proportions of one and a half cwt. per acre. It may be advantageously used upon all soils, but particularly on gravelly or burning soils. Used as a top-dressing, it is peculiarly applicable to present crops, and it is most profitably applied to lint, corn, and grasses permanent and artificial. Its effect upon clover is extraordinary, upon meadow-land it is great; but as it presses on the stronger grasses, it may, and I believe does smother the dwarf herbage. I doubt its having strength to bring wheat to full maturity, though its effect upon the straw is immediate and very great. It is easily spread in an unmixed state. It does not seem to produce any effect upon the succeeding crops. The cost of one and a half cwt. last year, was 33s. The bent corn manured with it yields well; but there are doubts whether it will produce a corresponding yield of wheat. No mildew appears to attend it; but it produces a rank and dark appearance in the straw of wheat.—*Journal of Agriculture.*

CARDOONS.—The soil chosen for the growth of Cardoons should be deep and light, but not over rich. The seeds are to be sown about the middle of April, in trenches about six inches deep, by twelve inches wide, into which a small quantity of rotten dung, must previously be dug. The rows should be set four feet asunder, and the seeds sown three or four together, about eighteen inches apart. When the young plants have acquired a few leaves, they should be thinned out to single plants. They require much moisture. Choose a dry day, at the end of October, to commence the operation of blanching. Tie up carefully the leaves and branches with strong matting, and then bind the plant closely round

with twisted haybands, about an inch and a half in diameter, beginning at the root, and continuing to about two-thirds of its height, covering the whole so as prevent the earth, when applied to it, coming in contact with the ribs of the leaves. If the Cardoons are to be used early, before frosts set in, the plants may remain without being earthed up, for the bands will sufficiently blanch them for use. But if otherwise, they must be earthed like celery, being careful not to carry the soil above the bands. A more common practice is to tie up the leaves, and earth it at different times like celery, but plants so treated are very inferior both in colour and in the length of the parts blanched.

In France, the flowers are gathered and dried in the shade, and, when so preserved, they are used instead of rennet to coagulate milk.

FLORICULTURAL INTELLIGENCE.

NEW AND RARE PLANTS, Figured in the Botanical Periodicals for July.

CLASS I.—DICOTYLEDONOUS PLANTS OR EXOGENES:

ORDER LEGUMINOSÆ.—The Pea Tribe.

LUPINUS RIVULARIS, River Lupine.—A handsome hardy perennial, being a longer flowerer and more gay than *L. polyphyllus*. The colours of the flowers are lilac and blue. It is a native of California, whence seeds have been recently sent to the Horticultural Society. Culture.—It may be treated like other hardy Lupines.—*Bot. Reg.*

BURTONIA CONFERTA.—Clustered Burtonia. This plant is a native of New Holland, where it was collected by Mr. Baxter. Its flowers are purple, growing in clusters at the extremities of the branches, like *Gompholobium*. Culture.—It is a greenhouse plant forming a compact bush, and increased by cuttings, in the same way as *Kennedyia* and its other kindred.—*Bot. Reg.* The soil should be sandy peat.

PULTENÆA SUBUMBELLATA, Subumbellate Pultenæa. A low shrub, with bright orange flowers, native of Van Dieman's Land, whence seeds were sent by Dr. Scott.—*Bot. Mag.* Culture.—It should be potted in an equal mixture of sandy loam and peat, and may be readily propagated by cuttings planted in sand under a bell glass.

CACTEÆ.—The Indian Fig Tribe.

CACTUS SPECIOSISSIMUS, laterius. A variety raised by Mr. Pressley, gardener to Walter Boyd, Esq. of Plaistow, in Essex. It approaches *C. Jenkinsoni* in many respects, but has paler and more brick-red petals. It was exhibited at a meeting of the Horticultural Society, on the first day of May, 1832, and was much admired. Culture.—No one seems to have any difficulty in cultivating plants of this description; nevertheless it may be well to know that they succeed much better in soil composed of a large proportion of leaf-mould mixed with sand and loam, than in any other compost.—*Bot. Reg.*

PORTULACÆÆ.—The Purslane Tribe.

CALANDRINIA SPECIOSA.—Shewy Calandrina. Of all the Purslane tribe, this is unquestionably the handsomest. On a hot dry bank or bed, when the sun is shining full upon it, with all its large rich crimson blossoms fully expanded,

and reposing upon the soft velvet bed formed by its succulent leaves, it is a most beautiful object, resembling *C. pilosiuscula*, but very far superior to it. A native of northern California, whence its seeds have been recently sent by Mr. Douglas. Culture.—It is a hardy annual, readily propagated by seeds, which it bears in great abundance. It loves dry and exposed situations, and flourishes most in scorching weather; but it should be grown in tolerably rich soil, or, if in very poor soil, it should be sown thick. Under the former circumstances, it forms a patch of a foot or more in diameter; in the latter case its branches are not above two or three inches long, as in the wild specimens in the Horticultural Society's possession.—*Bot. Reg.*

HYDROPHYLLEÆ.—The Water-Leaf Tribe.

NEMOPHILA AURITA.—Ear-leaved Nemophila. Rather a pretty species, found in California by Mr. David Douglas. It is a hardy, trailing annual, requiring a damp shady border, where it grows and flowers from May to the end of August. If sown in a place exposed to the sun, it soon withers and perishes. It is of very recent introduction by the Horticultural Society, and is at present extremely rare, but as it seeds tolerably freely, it will soon be more abundant. The flowers are purple.—*Bot. Reg.*

SCROPHULARINEÆ.—The Figwort Tribe.

CALCEOLARIA PURPUREA ELEGANS.—Elegant purple Slipper-wort. This beautiful variety was raised by Mr. Wheeler, nurseryman, Warminster, Wilts, from chilian seeds, received from Mr. Hugh Cuming. It is very beautiful when in full flower, the large spreading panicle, with its profusion of blossoms of various shades of purple, contrasted with the dark green leaves and glossy stem, have a very pretty effect. Like the other variety, this is also perennial, and will doubtless succeed very well in the open border, during the summer months.—*Sav. Fl. Gard.*

BERBERIDEÆ.—The Berberry Tribe.

BERBERIS BUXIFOLIA.—Box-leaved Berberry. This is a native of the straits of Magellan, and other southern parts of America, and has been lately introduced by Capt. King. It forms a low straggling shrub, and flowered with us in a cold frame; but in all probability it will prove quite hardy enough for our winters. It may be increased by cuttings or layers, and thrives in light loamy soil.—*Bot. Cab.*

ERICÆ.—The Heath Tribe.

ERICA QUADRATA.—The Square flowered Heath. A native of the Cape of Good Hope, introduced in 1829, by Mr. Lee. The flowers are white, very angular in their form, and the opening perfectly four square, which has suggested its name. It requires the greenhouse, and may be increased by cuttings. The soil should be peat.—*Bot. Cab.*

RHODODENDRON CAMPANULATUM.—Bell-flowered Rhododendron. This is a native of Nipal, and grows, as we are informed by Dr. Wallich, in elevated situations, so that he had no doubt of its bearing our winters uninjured. This has been confirmed by actual experience, during the last two seasons, in which several plants remained with us perfectly well out of doors. The young leaves are at first purplish underneath; they then become milk white, and afterwards, when quite hardened, change to a kind of tan colour. It may be propagated by layers and cuttings. The soil should be loam and peat.—*Bot. Cab.*

CLASS II.—MONOCOTYLEDONOUS PLANTS, OR ENDOGENES.

ORDER BUTOMEÆ.—The Flowering Rush Tribe.

LIMNOCHARIS HUMBOLDTII.—Humboldt's Limnocharis. This was received by Dr. Hooker some time ago, from Mr. Tweedie, of Buenos Ayres, gathered in pools and ditches of fresh water, near that city. Seeds were likewise received from the same source, at the botanic garden, Liverpool, when plants raised from them were successfully treated in the Aquarium, by Messrs. Shepherd, and the handsome and delicate yellow flowers burst open in great perfection, in April 1833.—*Bot. Cab.* Culture—Of course it is a stove plant, it should be potted in rich loamy soil, and placed in a large pot or pan of water. They may probably be increased by seeds.

SMILACEÆ.—The Smilax Tribe.

TRILLIUM ERECTUM viridiflorum.—Upright-stalked Green-flowered Trillium. This plant was received by the Glasgow botanical garden, from Canada, by favour of Mr. Cleghorn, and it flowered under a frame in the month of April, 1833.—*Bot. Mag.* Culture—All the species are hardy or nearly so, and if planted in peat, in a shady situation, either in a bed or in pots, and kept moist will thrive very well. They increase slowly by dividing the roots.

AMARYLLIDÆÆ.—The Amaryllis Tribe.

CYRTANTHUS SPIRALIS.—Spiral-leaved Cyrtanthus. This is a native of South Africa, near Algoa Bay; its flowers are bright red. Culture—It requires the protection of a greenhouse, and may be potted in sandy peat earth.—*Bot. Cab.*

EFFECTS OF ELECTRICITY ON PLANTS.—Many experiments in electrifying plants have been made by M. Nuneberg and the Abbe Nollet. According to the reports of the former, most of them increased in height, and flourished far beyond others not electrified. Some bulbous roots, he says, which had been frequently electrified, grew eighty-two lines and a half, whilst others of the same species not electrified, grew only fifty-two lines and two-thirds. But the report of Abbe Nollet is not so favourable; he found that the plants electrified by him made vigorous shoots at the first, but he thought the perspiration being, by these means, too much increased, their juices were too quickly dissipated. Hence the plants became gradually weaker, and at length prematurely perished. We yield due credit to both these reports, though they seem in some measure incompatible with each other. It is possible the experiments were made on various plants, at different seasons.—*COL. CAPPER.*—*Mag. Gard. and Bot.*

GENERAL MANAGEMENT OF PLANTS UNDER GLASS.—Alpine plants are such as will not grow to perfection in the open ground, and they must be protected during winter by a frame. They are mostly natives of high situations, among rocks, and on the tops of high mountains, and are consequently of low growth, seldom, if ever, exceeding six inches. They should be grown in small pots; they will thrive well in a mixture of peat, loam and sand, the pots being always well drained with potsherds. They should be shifted, at least, twice every season, and be divided, if the plant has grown too large. The mould, which has been shaken from the pots, if not exhausted, must be mixed with new earth, and the plants potted afresh, after which they will require a little water. If these instructions be attended to, alpine plants will always look healthy and neat.

GREENHOUSE PLANTS are such as are natives of the Canary Islands, New Holland, the Cape of Good Hope, and other countries in the same latitudes,

which only require to be protected from frosts in this country. They are, therefore, kept under glass during winter, but no fire is requisite, unless a strong frost is expected during the night. In winter they should have plenty of air during fine days, as early in the day as the weather will permit, and the house should be shut up very early in the afternoon, if the weather be cold. When the weather continues damp and wet, a little fire is requisite to expel the damp, for greenhouse plants are more likely to be injured by damp than cold. The plants should be looked over every day, to take off any dead leaves, and to water those that are dry. This operation should take place early in the forenoon, and if the surface of the mould in the pots becomes green, it should be removed with a flat stick, but not so deep as to injure the roots, when a little fresh earth should be laid upon them. Towards spring they require a more plentiful supply of air and water, and if no frost be apprehended some of the sashes should be left a little open all night, so that the air may be gradually admitted as the weather advances towards summer, until the time of setting the plants out of doors. In some seasons this may be requisite about the middle of May, in others not until the end. Calm cloudy weather is the best time for setting them out, the most sheltered situation should be chosen, a bed of ashes being previously prepared for them. There are various opinions as to the best time of shifting greenhouse plants into fresh pots and mould; we think the earliest spring time should be preferred. Some shift them before they are set out of doors, others when they first set them out, some do this in the autumn, which of all times is the most improper. The pots should always be well drained with shreds. If any of the plants have grown too straggling or tall, they should be cut back early in the spring, that they may become good bushy plants before autumn. In summer, while the plants are out of doors, they should be regularly supplied with water, in dry weather, as late as possible in the afternoon. The mould for potting should never be sifted, but chopped up finely with a spade with the turf. This keeps the soil light and loose, it allows the roots of the plants to spread and the water to penetrate, while on the other hand sifted mould hardens and becomes sour. Cuttings of greenhouse plants require putting in at various seasons. If they are to be ripened cuttings, they should be planted early in the spring; but if young, the time to plant them is when the shoots have grown a sufficient length for that purpose. In potting off plants raised from cuttings, care is requisite not to injure the fibres. Put them in small pots first, and increase the size as they grow; but be careful not to put them in too large, or to give too much water. Sow the seeds early in the spring, place in a little bottom heat, and pot the young plants separately when they have grown an inch high.—*George Don, on Gard. and Bot.*

RURAL AFFAIRS.

NEW ZEALAND FLAX, (*Phormium tenax*).—Extensively diffused as this valuable plant is over the surface of New Zealand, it is along its western coast that the greatest quantities have been found. The preparation of the Flax for native use, or for exchange with Europeans, is effected by the native women, and their method of separating the silky fibre, from the long Flag-like leaf of the plant, of which it forms the under surface, appears to be quite simple. Holding the top of a recently cut leaf between their toes, they make a transverse section through the succulent matter at that end with a shell. Then by inserting it between that substance and the fibre, they readily effect its separation by drawing the shell through the whole length of the leaf. Simple as appears this mode of separating the flax from the leaf by a shell in the hands of those savages, the European has not succeeded in his endeavours to prepare the fibre for himself, either by that, or by any other means which have been tried. Nor has any instrument or piece of Machinery yet been invented, to enable him to strip off and prepare this valuable filament for the English market. The flax thus obtained from the natives, by the merchants of Sydney, undergoes no heckling, cleaning, or other preparation previous to its being shipped for the English market, but is merely made into bales, by being put in a press and screwed down. At the period when the trade with this noble race of savages was first opened by persons of courage and enterprize at Port Jackson, axes, knives, and other edge-tools, together with beads and similar ornaments, were received by them with avidity; but now, they will hardly take any thing in exchange except arms and ammunition. Although most of the Chiefs can muster a larger force armed with muskets, their avidity to add to their armoury has undergone no diminution: and with the exception of blankets, red woollen shirts, and other warm clothing, tobacco, and sugar, scarcely any article of English manufacture or merchandise has, as yet, proved an attraction to them. According to the statistical returns of New South Wales, for the year 1828, New Zealand Flax, to the extent of 60 tons, and valued at £2,600, was exported from Sydney to England during that year; whilst during 1830, the quantity imported into Sydney for the English market was eight hundred and forty-one tons, and in 1831, one thousand and sixty-two tons. Its present price in London, may be stated at from £15 to £25 per ton, depending much on its quality, and the clear manner in which it is brought into the market. From the experiments of M. Labillardiere, the strength of the fibre of this plant, as compared with that of the *Agave Americana*, flax, hemp, and silk, is as follows:—the fibre of the *Agave* breaks under a weight of seven; flax of eleven and three quarters; hemp of sixteen and three quarters; phormium of twenty-three seven-elevenths; and silk of twenty-four. Thus it appears that of all vegetable fibres, that of phormium is the strongest; and, according to the French authors, of a brilliant whiteness which gives it the appearance of satin. Hence the clothes made of it do not require bleaching, which so materially injures the quality of both hemp and flax.

THE TURNIP-FLY, *Altica*.—The turnip-fly is not always of one kind, but the difference in them is not very important, for they only alter in their paint, their build is always alike. The most common is bottle-green, but in some fields all are painted black, with a white line on each side from stern to stern down the deck. They are so active, that the only way in which I could ever obtain them,

in newly sown fields, was by sweeping the surface with a gauze net on an iron-hoop at the end of a strongish stick. They jump like fleas as soon as they see you. This insect or rather its grub, commences its attack on the turnip as soon as it is up, devouring the two cotyledons and the little heart, and sometimes, in a few days, leaving the field as brown as it was on the day it was sown. Schemes without number have been tried to get rid of, or kill this little pest, wherever it has appeared. I have always observed the greatest quantity of grubs on very young plants; they are very various in size, and it is not before the plants are a fortnight or three weeks old, that the beetles appear in any quantities. Yet there are some beetles observed from the first coming up of the plant. Now, I know from experience, that the turnip-fly feeds on wild mustard, and several other hedge plants, and therefore it is not improbable that when they smelled the fragrance of the fresh bursting cotyledons of their favorite food they would skip down from their spring habitations, the hedges, and make their attack. I first sowed some seed in a flower pot, with earth out of my garden; it produced the animal in abundance. Secondly, I inclosed the pot with paste-board and canvass, with the same success; but there was still a possibility of the enemy getting in, as I had not made the cover sufficiently close. Thirdly, I made a light frame, about eight inches square, covering it with very fine silk gauze, carefully stopping the crevices of the door with wasted paper, and round the pot where the cover was fastened on it with putty, so that there was no possibility of any thing coming to it from without. Yet this experiment was attended with the same success; except that one point, that is, a negative point, was now proved, namely; that the fly did not come to the turnip from other plants, and this was a point gained. Fourthly, I baked the earth in a cast-iron pot over the fire, and used no other water to water the seed but such as I had boiled myself, applying it at the bottom of the pot in a common feeder. Then I exercised the same care, and took the same precautions as before. I did not take off the cover till the plants were of a considerable size, and I found them all a-hop with beetles. I had now made another step; having before found that the beetle did not come from other plants, it was now clear that it was not in the earth nor in the water. Fifthly, with a lens, I examined the seed, and found on it a number of white flattish substances; some of the seeds were without any, but there were generally one, two, three, four, and in one instance five on a single seed. These I concluded were eggs, and I thought the only way left me was to attack them. It would have been easy enough to poke them off with a needle, but I could not see how I was to employ a needle and a magnifying glass on a sack of turnip-seeds. I, therefore, made some pretty strong brine, and soaked the seed in it for 24 hours, then dried it thoroughly, and, with all the precautions I have mentioned, I sowed it again, and there was not a single fly, neither was there a single turnip injured. I tried again and again, and I found that without weakening the brine, if the seeds were only kept in it three hours, there were no beetles, but yet the seed came up as well as ever. I now practice this method with turnip-seed, cabbage-seed, and in fact with all the cruciform plants in common cultivation, with very satisfactory success. The whole of these experiments were made on the swedish turnip, which is generally more infested by these beetles than any of our older sorts.—*Rusticus*.—*Ent. Mag.*

PART III.

MISCELLANEOUS INTELLIGENCE.

I.—QUERIES AND ANSWERS.

THE AUTHOR OF THE DOMESTIC GARDENERS' MANUAL, to "*Vigorniensis*." I should be remiss, were I wholly to pass over the observations of *Vigorniensis* without any notice. He conceives that I was "under some misapprehension, as to the species called The Striped Housaine Melon." (See *Horticultural Register*, Vol. 2, page 202.) I am perfectly certain that I could not be deceived in the qualities of my fruit; for, independently of the large melon which I forwarded to the Horticultural Society, I cut and used three at home. So that I am clear as to the value and exquisite flavour of the fruit, and the colour of the flesh. The latter was, as described by Mr. Knight, green and pinkish, or salmon colour. The seed too, could not be other than genuine, because it came direct to me in 1832, from the President. I had not, however, ascertained at the time I penned my papers, that there were two varieties of the Striped Housaine. I have subsequently received a communication from Mr. Knight, containing the seeds of both with information exactly corresponding with that stated by *Vigorniensis* as having been also sent to him; viz. "that one of the varieties of the striped Housaine is a white-Melon." The *Ispahan* melons produced by me, varied in nothing but size: they were externally yellow or lemon-colour, and the flesh white or cream-colour. Though quite ready to acknowledge any error, I must steadfastly adhere to the facts I have witnessed; and these I have faithfully stated. *Vigorniensis* may or may not be gratified by the perusal of another paper from the pen of Mr. Stafford, in reply to his various particular queries, under the more general one, "*How shall I treat Vines in Pots?*" page 281. He will, I hope, pardon me, if in the interim, I step forward, and afford some information, the result of my own experience, in consequence of the suggestions of Mr. Stafford in his several articles upon vine-culture. Before I say one word, however, I request him carefully to re-peruse the excellent paper by Mr. Smith, in page 536, of Volume 1. And now, presuming that he has done so, I observe, that I have tried, and am persisting in the trial of grape-culture in pots, to a considerable extent. I have raised plants from seeds, single eyes, spur eyes, cuttings and layers. All have succeeded, and I now possess above twenty potted plants of various ages and sizes, of the white, grizzly, and purple Frontignan, the Frankendale, Muscadine, Black Hamburgh, White Sweet Water, &c. I have tried, from the first, almost every species of soil, from that of gravelly sand, to the richest light compost; and the young trees have grown well in each. I am still a learner; but there is one experiment which I have carried on for three years, and into its detail, I will now slightly enter, in order to afford some precise information on a subject which really possesses considerable interest. At the close of the year 1830, I purchased a strong vine with two shoots, for the open wall, which was sold to me as a genuine black Frontignac. When I planted it, I found that one of the shoots was well situated for a layer, and I accordingly tongued and layed it in a pot of good sandy earth. The shoot was then shortened to four or five eyes, and being secured to the wall it grew, and the best new

shoot was selected, and in the following autumn the plant was detached from the parent. On January 1st, 1832, this layer was potted in light turfy surface mould, and brought into a stove, where the temperature was seldom above sixty degs. in the day, and fifty at night. The pot was about nine inches at the top, and ten inches deep; the plant was cut down to three eyes, and the object in view was the production of *one shoot* of bearing wood for the following year. During the spring and early summer, the growth of the sole selected shoot was about six feet, and when it had attained that length, the point was pinched off, just before a bud. Water was freely given, till the wood began to assume a brownish colour in several of the lower joints. I never objected to see the water pass through the soil in the feeder-pan below the pot; and as often as that became dry, I repeated the watering, but never suffered any stagnant fluid to remain more than a day or two in the pan. When the wood began to ripen, the pot was removed, placed for a few days in a room adjoining to the stove, and finally, to a north-east wall, against which the plant was slightly nailed. In that situation it remained till December 26th, when the vine was repotted into a large pot, the diameter of which was sixteen inches, and its depth fourteen inches. The soil which I recommend is the grassy surface earth of a meadow, chopped into pieces of about an inch square. The turf should be about two inches thick, and the earthy part a free, light, sandy loam. With this vegetable earth, a fourth part of rotten leaves and a small portion, perhaps one-twentieth part of old mortar may be blended; and it would not be amiss to add also to each pot of the size named, a pint of bone-dust, or of the clippings of feathers, for the latter as well as the former contain abundance of slowly decomposable animal gelatine and albumen.

After potting, the vine was placed against a warm south east wall, the pot being protected from frost, by a deep covering of litter. It remained there till the last week in January, and was then taken into the room adjoining to the stove. On the twenty-seventh of the month I cut the shoot to the length of five feet, and took off two of the buds, for every one that was left; thus letting those that remained stand about a foot asunder, and on opposite sides of the shoot. In this operation, I found that the juices were in motion; for the sap flowed copiously at the wounds, particularly at the upper part of the rod. The vine was next placed in the stove upon the kerb of the pit. Referring to my diary, I find that on the 8th of February the buds began to unfold, and in seven days subsequently there were one, two, or three bunches distinctly visible upon each shoot, with the exception of the two lowest. On the 21st. the fruit being fairly developed, the points of several laterals were pinched off above the joint beyond that which produced the upper bunch. Rain-water just tepid, not above seventy deg. was given almost every day, till it reached the feeder, or whenever that which had passed through was taken up. Manure water, that is a weak solution of the drainings of a cow-stall, (one-sixth to five-sixths of rain water) was given to the extent of about a quart once every alternate week, as also soap-suds from the wash tub, reduced by adding an equal part of water, in the intermediate weeks. The temperature, during Feb. averaged at 7 or 8 o'clock a. m. 54 deg. noon or maximum, about 66 deg. and at 10 p. m. 60 deg. In March the morning and evening heat did not much exceed that of February; but that of mid-day, with sun, rose occasionally to 80 or 85 deg. April produced a considerable advance of temperature. The mornings and nights showed about 62 degrees, and the max-

imum, chiefly by sun-heat, ranged from 74 to 103 degrees. During the whole of May, the average of the three periods may be stated at from 5 to 10 deg. warmer. Air was not considered as of primary importance. The sashes were more or less moved when the temperature was above 80, but seldom were lowered above two inches. Hence it may be said that the direct solar ray always passed through the glass, and that the house was always covered, the spaces for the admission of air being little more than so many narrow crevices in the glass roof. My house is low in front, and from the nature of the slope (26 deg.) better adapted to pines than vines. The tree in question was trained in a direction corresponding with that slope, and about 8 inches below the glass. Under these circumstances, and with the treatment described, the fruit swelled well, changed colour about the 25th of May, and became perfectly mature in a fortnight. The vine has gained a foot of well ripened wood at the end of the main shoot, and has produced a secondary shoot seven feet long from one of its lower eyes. This has been trained across the house at a right angle with the main shoot, and now is shortened to about four feet. The two leaders and all the laterals, are brown and hard, and I never saw a more healthy tree. Each of these was aloped early, save one, near the top, which had two bunches upon it, and I suffered it to run on, to try the effect. For a time these bunches swelled the best, but they ceased to do so; and when as large as peas, began to show spots. I stopped the shoot, but could not arrest the local disease, and therefore cut off the two bunches. I had previously retained only seven, being unwilling to try the vine too far; but, had I not pruned off the laterals, I believe I might have had twenty or two dozen bunches. Not wishing to enlarge a paper which has already become too long, I desist from saying more than that I shall be happy to answer any question which may be put to me, if it be in my power to do so. If any be proposed that my reason or experience cannot solve, matter will be afforded for reflection, and for future investigation, which may lead, ultimately, to profitable results. G: I. T.

II.—NOTICES AND ANTICIPATIONS.

LITERARY NOTICES.—Mr. Curtis is preparing for the press a new edition of his *Guide to the Arrangement of British Insects*.—Professor Dewhurst's *Natural History of the Order Cetacea*, and the *Oceami Inhabitants of the Arctic Regions*, is expected to appear early this month.

THE ANTHEUM.—Having visited Brighton for the purpose of inspecting this stupendous erection, we are enabled to give our readers a faithful description of the design from our own observations. We confess that we were both astonished and delighted at the boldness and simplicity of the edifice; it rises like a little world out of the earth; already it promises to form a new era in the art of gardening, and to bring about an entire revolution in that of exotic horticulture.

The doom, of which the diameter is one hundred and sixty four feet, and its height sixty-four feet, exclusive of the cupola, is supported by twenty cast-iron principals, and the same number of auxiliary ribs, the former of which butt against a strong iron ring in the centre, and thus form a gigantic arch without the aid of prop or pillar. The principals spring from a solid mass of rock-work, ten feet below the surface of the earth, and are tied together by seven cast-iron

purligns or hoops, which support the wrought iron sash-bars to carry the glass. Notwithstanding the solidity of the building, the lightness of its appearance from the centre is truly astonishing, from which point you can only perceive the edge of each principal, giving it an almost airy-like creation. Around this dome, an outer circle is forming, which when completed will make the circumference about seven hundred feet.

The planting of the interior has already commenced, and we were allowed to inspect the model and map, or plan of the grounds, so as to describe it accurately. The centre of the building, which will be heated on a novel plan, is to form a *Palmarium* for the "nobles of the vegetable kingdom," and it is expected that the tribes of the *Musæ* and *Palm* will be seen here in greater beauty than they have ever yet been beheld by man. Neither wind nor weather can affect them, and they will be surrounded by the choicest and most beautiful climbers ever yet congregated into one spot. To the north of the *Palmarium*, a hill of considerable height arises, elevating flowering trees and shrubs in a most natural and picturesque manner, at the same time affording walks over the summit, from which the plants can be looked down upon. At the foot of this hill, a small lake or aquarium is formed, where the beautiful family of the *Nymphææ* are to float amidst other curious aquatics. A bridge thrown over this piece of water affords the opportunity of looking down upon the plants, whilst it adds to the delusion of the scene. In another part, a massive rock rears its rugged form, which is to be covered with the singular tribes of succulents. These are surrounded by spacious gravel walks, and grassy brinks covered with flowers, and overhung by trees and shrubs from all the warmer quarters of the globe.

This princely undertaking has been wholly designed and executed by an individual well known to the world by his writings on plants, particularly the *Pomarium Britannicum*, *Flora Historica*, &c. It is expected to be entirely completed about the end of September, and we sincerely hope it will realize Mr. Phillips' most sanguine expectations. Indeed we cannot for a moment doubt its success in a pecuniary point of view, for we are sure no person will go to Brighton without visiting this unique garden, which so entirely leaves in the shade the most splendid conservatories hitherto erected, with which they will bear no sort of comparison. We were pleased to learn that many noblemen and gentlemen, as well as nurserymen and gardeners, have already sent presents of plants to assist Mr. Phillips in his spirited undertaking. His Grace the Duke of Devonshire has been a liberal contributor, and we hope others who have collections will follow the example, for it may be deemed a national institution, which cannot fail to produce many beneficial results. It is our intention to present a view of the *Antheum* in our next number.

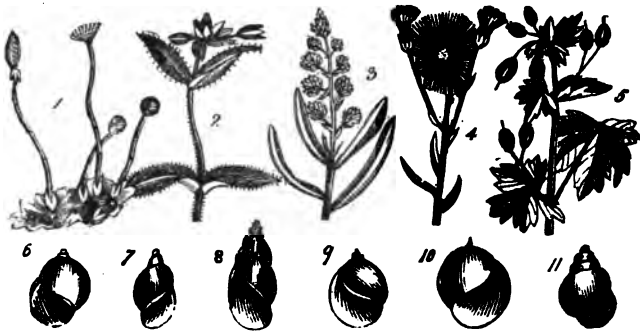
III. NATURALIST'S CALENDAR,

OR OBSERVATIONS ON NATURE, FOR AUGUST.

In the vicinity of moist hedges is found, in large pale green patches, the *Juncgermannia epiphylla*, Fig. 49, (1). In pastures, and most waste places, the *Cerastium viscosum*, or Mouse-ear Chickweed abounds. (2). It grows about six inches high, and bears white flowers, on a sort of loose panicle. In waste places

on rocks, and upon the rubbish thrown out of coal-pits, the Dyers-weed, or *Reseda Luteola* grows in large quantities. (3). This plant is much used by dyers, in France. It affords a most beautiful yellow dye for cotton, woollen, mohair, silk, and linen. Blue cloths are dipped into it to be made green. The yellow colour of Dutch Pink is obtained from this plant. The entire plant, when about flowering, is pulled up and employed both fresh and dried. The plant grows about two feet high, and bears small yellowish flowers on long narrow spikes. In dry gravelly and chalky pastures, the blue Fleabane, *Erigeron acer* (4) may be usually found; it grows about 18 inches high, and may be known by its bluish red stem. Under hedges, on walls, and in waste places the *Geranium lucidum* (5) is common. The whole plant is shining, the flowers are small and rose-coloured, sometimes pale or nearly white, though this seldom happens.

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MOLLUSCOUS ANIMALS.—In marshy ground and slow running or stagnant ditches, the *Limneus fossarius* (7) may often be found. It is of a pale brown or greyish colour, and about half an inch long; there are three varieties, all very pretty shells. In most ponds and slow streams, may be perceived a little transparent non-coloured shell, very glossy, and about half an inch long; it is the *Physa Hypnorum* (8). The animal feeds upon the water plants, at least it appears to do so from the numerous perforations in the leaves of those growing near where it lies. The *Physa alba* (6) is quite unknown to us; it is said to be about half an inch long, and quite white in colour. Turton in his "Manual of British Shells," states that it is found in the river Towyne, in North Wales. On the under side of the leaves of aquatic plants growing in rivers and streams, when the water is not very rapid, may be found the *Physa fontinalis* (9). The shell is horn coloured, about half an inch long, and half as much broad. In ditches, where the water has long stagnated, the *Limneus glutinosus* (10) abounds; it is of a yellowish horn colour, and usually lies in the mud at the bottom. The *Paludina impura*, (11) an oval oblong yellowish horn-coloured shell, may be found in canals and in many ditches; it is about half an inch long, and three tenths wide; when found in ditches it is often covered with a blackish coat, which being cleaned off leaves the shell partially transparent.

INSECTS.—The *Trochilium tipuliforme*, is very injurious to the common cur-

rant, its larva feed on the pith of the younger branches, yet the injury it does is not one tenth part so great as that of a little moth, *Lampronia capitella*. It is not uncommon, in spring, to see a large and flourishing currant bush put forth its leaves, and then in a few days wither away. If we examine the young shoots, we find within them a small reddish caterpillar, having something in its external form, which, combined with its colour, forcibly reminds us of that of *Cossus ligniperda*. Apparently, this larva enters the shoot at the height of about an inch, and then penetrates downwards quite to its bottom, eating the pith of this part of the shoot. It then proceeds to a second, and even to a third. When full fed, it undergoes its metamorphosis at the bottom of the shoot. In about five weeks, the imago appears, and may be seen flying in swarms around the currant trees.—*Ent. Mag.* The moth is black, with yellow spots on the wings.

The amount of Sunshine during the month of June is as follows:—

June	Morning	Evening	Total	Average Daily
	99 hours.	92 hours.	191 hours	6 hours 22 min.

IV.—SOCIETIES,

CONNECTED WITH HORTICULTURE AND NATURAL HISTORY.

TUNBRIDGE WELLS HORTICULTURAL SOCIETY.

THE second exhibition of this recently established Society for the present season, took place on Thursday the 20th of June, at Mr. Nash's Assembly-Room, which was honoured by the attendance of a very numerous and highly respectable company, who appeared much gratified and delighted with the magnificence and novelty of the scene. The brilliant display of valuable plants which had been sent from the superb gardens of William Wells, Esq. of Redleaf, formed the principal source of attraction. They consisted of a Chinese Honeysuckle, of the greatest rarity and beauty, varieties of *Alstroemeria*, *Gladolus*, *Cactus*, *Calceolaria*, *Gloxinia*, *Salpiglossis*, &c. in splendid bloom and luxuriance.

The contributions from the greenhouse of Mr. Joseph Deives, of Mount Zion, were also very beautiful, and included two plants of the elegant *Cactus speciosissimus*, a selection of rare *Pelargoniums*, yellow *Picotees*, a fine *Hydrangea Hortensis*, with large and well-formed flowers of a bright blue colour, and some new and handsome heartsease; the whole of which were arranged with so much neatness and judgment, as to be deservedly noticed and admired. A fine well grown *Nerium splendens* in full bloom, was sent by Aretas Akers, Esq. and some very beautiful *Pinks* were contributed by Mr. Petard, of Southborough. Mrs. Robertson, of Bishop's Grove, contributed a basket of fine *Pelargoniums* and *Kalmias* in pots, and some handsome roses. The Misses Harman, of Calverly-Lodge, sent a fine *Cactus speciosissimus*, some *Roses*, *Pelargoniums*, and *Kalmias* together with a rich bouquet. Several very handsome bouquets and baskets of flowers, tastefully arranged, were also contributed by other Ladies of Tunbridge Wells, and its immediate vicinity. It was pleasing to see at an early hour the respectable Nurserymen and Practical Gardeners of the neighbourhood, pressing forward with their numerous beautiful specimens for exhibition, among whom we observed Mr. Hooker, of Brenchley, and Mr. William Wood, of Maresfield, whose gardens probably not only exceed any other in England, but also in Europe, in their rich and extensive collections of *Roses*, in all their varied and beautiful hues; consequently the selections they were enabled to make from these, afforded to the admirers of this charming flower, an interesting and exquisite treat. A selection of greenhouse Plants was exhibited by different gardeners.

The gratifying result arising from the encouragement afforded by this Society to cottagers having gardens, and to industrious habits, has already begun to appear, and will no doubt give it an additional claim to that warm support, which it so justly merits. A liberal distribution of Prizes was made including those for cottagers.

V.—MONTHLY HORTICULTURAL CALENDAR.

FOR AUGUST.

FRUIT DEPARTMENT.

Apple Trees.—About the beginning of the month, a small buff-coloured moth deposits its eggs on the under side of the leaves, where in a few days they will be hatched. They feed in droves, and forming themselves a kind of web, they remain feeding till September or October and then go into the pupa state, in which they remain till the following spring. There is another also which deposits its eggs at the same time, and also feeds in a thick web. They both are evidently the same species that feed on the willow, &c. &c. the webs of which hang in such abundance upon our hedges throughout the summer. The moth is white, covered with many distinct black spots. There is also another with wings of a chocolate colour, marbled with white, which deposits its eggs about the middle of the month, and the caterpillars feed till the middle of September. To destroy them in small gardens or orchards, the webs of caterpillars may be gathered by the hand, and the trees syringed with soap suds any time in the course of the month.

Cherry Trees.—If caterpillars begin to infest the trees this month, pick off the infested leaves towards the end of the month, and wash the trees well with warm suds. If the black fly appears, mix some tobacco-water with soap and water, as recommended page 364.

Current Trees should now be matted in dry weather to preserve them till late in the season.

Fig Trees out of doors will begin to ripen their fruit; give them abundance of water at the roots, if the weather be dry. Soap suds are the best.

Gooseberry Trees may possibly be infested about the beginning of the month with a second brood of caterpillars; keep them down with the hand until the fruit is all gathered; then boil some foxglove plants in an old copper, or any vessel not used for other purposes, and water the trees over head with the liquor through the rose of a watering-pot. The effects will be instantaneous, and in a great measure this will prevent their appearance the following year. Be careful not to water the ripe fruit with it, for it may have an injurious effect upon the individuals who eat it.

Peach and Nectarine Trees, if infested with the Aphis or red Spider, may be treated as recommended last month, page 336.

Pear Trees may be treated as recommended last month, page 335.

Plum Trees, if infested with the Aphis, see last month: and as soon as the fruit is gathered, pick off the leaves on which they are feeding, then wash the trees well with soap suds, and this in general will be found effectual at the first dressing.

Strawberry Beds, in late situations, and now in bearing, will require watering, if the weather proves dry. Those in pots intended for forcing must be constantly divested of their runners. This is also a good time to plant new beds.

Vines in Pots now brought into the Vinery will ripen their fruit in January.

FLOWER DEPARTMENT.

Azaleas may yet be propagated by cuttings of the young wood, taken off close to the plants, and planted in sand under a bell-glass, in a shady situation.

Camellias wanted to flower early may be brought into the greenhouse, the remainder may stand out of doors till the end of September, or beginning of October.

Carnations may be laid or raised from cuttings, taken off at the third joint, and planted under a hand-glass. Transplant seedlings six inches apart, in light rich earth.

Calceolarias intended to flower late in the autumn should now have the branches cut down to within an inch of the soil, and be top-dressed. See page 267.

Chimonanthus fragrans may be increased by layers, cuttings of the young wood will also grow, if planted in sand under a bell-glass, and the pot be plunged in a little heat.

Cyclamen persicum should be turned out of the pots in which they flowered, and planted in an open but sheltered border. See page 213.

Dahlia Cuttings may yet be put in with success.

Greenhouse Plants of most sorts may still be propagated by cuttings.

Mignonette to stand the winter in pots, should be sown about the middle of the month, in light, sandy, maiden soil, perfectly free from dung.

Orange and Lemon Stocks may be budded, if this were not the case last month. Cuttings may also be put in. See page 165.

Pinks may yet be propagated by pipings, planted under a hand-glass, if a sufficient quantity be not put in.

Eranthis should be taken up, if this operation were not performed last month, and spread in a dry, airy situation, previously to their being laid by. Those planted last month will flower about the middle of September.

Rose Trees of most sorts may still be budded, but the varieties of China do the best, if budded early in the season.

Violets may still be propagated by dividing the roots and cuttings.

VEGETABLE DEPARTMENT.

Carrots sown about the middle of the month will be fit for table in the spring. A small fly deposits its eggs on the carrot, about the beginning of the month, but we are unable either to tell what sort it is or how to destroy it.

Cabbage seed sown the first week will come in for coleworts in winter and spring. Also finish planting Savoy, &c.

Cauliflowers planted out now will be in use from October towards the end of the month. Sow more seed to stand the winter in frames.

Celery planted out last month will require earthing in fine weather; also more should be planted for spring use.

Cucumbers raised from cuttings, if well watered and otherwise looked after, will bear abundantly from the beginning of September.

Endive.—Plant out for a full crop, and sow more seeds to come into use early in the spring.

Lettuces sow in the first and third weeks, to come into use in October; plant out also from the seedling beds such plants as are of a sufficient size.

Onions must be taken up in fine weather. Sow a few Strataburgh to use in October and November; and about the middle of the month, sow a crop of Welsh for winter use.

Mushroom Beds made now come into use in October.

Broccoli.—Sow Green Cape and Early Purple Cape, to produce heads in April and May next year.

Shallots and Garlic must be taken up, if not already removed. Choose dry weather for the purpose, and spread them out until sufficiently dry to tie up in bunches.

Sweet and Bitter Herbs are readily propagated by slips or cuttings. And on dry days they should be gathered to dry for winter use, let this be done just before they come into flower.

Spinach.—The prickly and Flanders should be sown for a full winter crop, not later than the middle of the month.

Turnips should be sown in the first week for a main crop at the end of autumn, and about twice more to succeed them.

THE HORTICULTURAL REGISTER.

SEPTEMBER 1ST, 1833.

PART I. ORIGINAL COMMUNICATIONS.

HORTICULTURE.—ARTICLE I.

ON THE CULTURE OF SWEET AND BITTER HERBS,

With some observations on their Natural History. (Continued from page 350.)

HYSSOP, (*Hyssopus officinalis*.)—This plant receives its name from the Hebrew word *ezob*, but the plant to which the name was originally given is unknown. Some suppose it to have been a kind of moss, and others what we call Winter Savory; but Pliny describes the Savory distinctly, and says the best hyssop grows on Mount Taurus in Cilicia, and that next to that is the hyssop of Pamphylia, both in Asia Minor. The Romans used it with figs as a purgative, and with honey as an emetic; a plaster was formed of it for the sting of serpents. The plant we call hyssop is a native of the south of Europe, whence it was introduced into this country in 1548. Dodoens recommends the use of a decoction of this plant, boiled with figs, rue, and honey, for shortness of breath, hard, dry coughs, and for complaints of the chest. When boiled in vinegar, it is said to be good for the tooth-ache. It is also recommended in cases of bruises or falls, either in the form of a poultice, or a little of it bruised, placed in a linen rag and applied to the part. When boiled in water, the vapour arising from it removes ringing in the ears, if introduced into them.

Culture and Propagation.—It may be raised by slips, seeds and cuttings. The former should be taken off in March or April, and planted in light sandy soil, in any situation. The seeds should be sown in April, either broadcast or in shallow drills six inches apart; and they should be transplanted out in June and July. Cuttings of the young stalks may be taken in April and May, which, after being planted, will require shading until they have rooted.

LAVENDER, (*Lavandula Spica*.) This plant was called by the Greeks *Nardus*, from *Naarda*, a city of Syria, near the Euphrates, and *Spica* because it bears its flowers in Spikes. There is but little doubt that this is the spikenard of the ancients, of which ointment was made, and which was considered so very precious. Pliny, who flourished shortly after the christian era, says that the most costly and precious ointment was made from the aromatic leaves of the *Nardus*, and that the spikes (blossoms) sold for 100 denarii per pound, being in our coin about £3. 2s. 6d. He further says that the leaves brought from Syria are the best, and next to them the Gallic lavender or *nardus* is in estimation. This ointment was usually kept in pots or vessels of alabaster. Some persons, however, have thought that the spikenard ointment of the ancients was made from the root of a species of Valerian, but this seems hardly probable, for the smell of all the species of Valerian is far from being pleasant. It appears to have received the name of Lavender from *lavare* to wash, because it was much used to wash or bathe the body. Both Dodoens and Gerard recommended those afflicted with palsy or apoplexy to wash themselves with lavender-water, or anoint their limbs with the oil made from its flowers. Lavender is an excellent cephalic and nervine. It is also useful to sweeten the air of sick rooms, when the state of the patient or of the atmosphere will not admit of purer circulation. The oil of this plant is often called Oil of Spike. The flowers are said to be amongst the most powerful stimulants to the nervous system, whether applied externally or internally.

Culture and Propagation.—It is readily propagated by slips in the same manner as Rosemary. It succeeds best in a dry poor soil, bearing more flowers and having a more powerful odour. The spikes of flowers should be cut when the flowers on the under part begin to drop. Spread them upon a sheet, and every morning and evening let them be exposed to the sun, removing them during mid-day into the shade, and being careful never to expose them to any rains. This process should be continued until they are perfectly dry, and they must then be preserved in paper bags, in the same manner as other aromatic herbs.

MARJORAM, (*Origanum*.)—Only two species are usually cultivated in our gardens, the Pot-Marjoram, (*O. Onites*.) and the Sweet-Majoram, (*O. Marjorana*.) The former was introduced into this country, from Sicily, in 1759; it grows in abundance in Syracuse, and in some parts of Greece; it gives a pleasant flavour to broths, and was formerly much more used for the purpose than at present. The *Sweet* Marjoram, called also the *Knotted*, because its flowers are collected in small close heads like knots, is a half hardy biennial, a native of Portugal, and was introduced here, in 1573. The leaves have a pleasant smell, and a moderately warm aromatic bitter taste. This herb is mixed in food to make it more savoury, to assist digestion, and correct flatulency. It is accounted cephalic, and is useful in nervous complaints; it is regarded as a specific for apoplexy and paralysis, and it was a very celebrated plant in the estimation of Hippocrates.

Culture and Propagation.—The Pot-Marjoram is a perennial and propagated by dividing the roots in March or April, which should be planted in a light dry soil, in any situation. The Sweet or Knotted species is treated as an annual; it may either be sown in boxes, in a frame or greenhouse, or on a warm border of light soil, in the open air. The best situation out of doors is under a south wall, or on the border of a stove. The seeds should be sown broadcast, and be very lightly covered. It is sometimes sown on a hotbed, and transplanted into a border in May; and under a hand-glass in April, and transplanted when the plants are about three inches high. Judging from our own experience, we recommend that it be sown where it is intended to stand, whether on a hotbed, under a hand-glass, in a box, or in the open border, for the plants seldom thrive so well after transplantation. The best time to sow is the beginning of April. Cut and dry them in the shade after the same manner as other herbs.

MARIGOLD, (*Calendula officinalis*.)—The name *Calendula* is derived from *Calendæ*, the first of the month, because the plant continues flowering every month from June until October or November, when its life terminates, being only an annual. The flowers are thought to be aperient, (gently purgative) cardiac, (cordial) alexipharmic, (antidote against poison) and sudorific, (promoting perspiration.) The leaves are also stimulating and gently purgative; they were formerly eaten and relished as a salad, but are now nearly out of use. Dr. James thought the flowers scarcely inferior to saffron. This herb is used in broths, to which it imparts an excellent flavour, but it is much less in demand than formerly. It was introduced into this country, in 1573.

Culture and Propagation.—It is propagated by seeds, which are ripened plentifully. These should be sown broadcast in light soil, in March or April. Nothing more is required than to keep them free from weeds. When in full flower, a store may be gathered for winter, and they should be spread out to dry in the same manner as Camomiles, page 347. Afterwards pack them in paper bags. If some of the plants be allowed to scatter their seed, they will continue to propagate themselves, without further care than forking or digging the ground, and keeping the plants free from weeds.

MINT, (*Mentha*.) This plant derived its name from the fabulous story of Mintha, the daughter of Cocytus, being changed into this plant. The species most in use for culinary purposes is the Spear Mint, (*M. viridis*.) The ancients appear to have used it in great quantities. Pliny says "you will not see a husbandman's board in the country, on which all the meats from one end to the other, are not seasoned with mint." The Romans put it in milk, to prevent it from becoming sour, or from curdling. Those who drank milk took mint with it, lest the milk should coagulate in their stomachs. Spear Mint is a warm stomachic, and is useful in loss of appetite and nausea. An infusion of the dried herb is better than the green, or the extract prepared with rectified spirits. The infusion possesses the whole virtues of the mint, whilst the essential oil and distilled water contain only the aromatic part; and the expressed juice, nothing but the bitterness and astringency, with the mucilage common to all vegetables; all the species of *Mentha*, indeed the whole Natural Order Labiateæ or Mint Tribe possess a considerable portion of camphor. A conserve made of it is very grateful.

Culture and Propagation.—It is usually planted in beds. In the spring, when the young shoots are about an inch and a half or two inches high, take hold of the top of each and draw them up; they will generally have a small portion of root attached to them, and if they have not they will readily grow. Choose a moist situation, where the land is not very strong, and the roots will soon spread over the whole bed. New beds should be replanted, and the old ones be destroyed every five or six years, or at least as often as the beds become exhausted, which may be known by the shoots being short and spindling. *Forcing.*—By this means mint may be obtained all winter and spring. Plant the roots in pots, and place them in a pit or hotbed frame where they can receive a good warmth. The roots may also be thickly planted in a hotbed and covered with about one inch and a half of light soil, which must be kept pretty moist.

Gathering for Winter.—Just before the herb comes into flower,

on a fine dry day, tie it in small bunches, which you must hang up in the shade. Always cut the herb as early in the morning as it becomes dry, for in hot weather much of the volatile quality is evaporated in the after part of the day. Some persons consider it better to place the mint in a screen as soon as gathered, and to dry it quickly before a fire, so that it may be powdered, and afterwards put into glass bottles, kept well stopped.

PEPPERMINT, (*Mentha Piperita*.)—This is readily distinguished from the last by its penetrating smell and more pungent glowing taste. It is chiefly cultivated for medical purposes, and for distillation. A rich cordial is made from it, highly esteemed by many persons. This species is said to be an excellent remedy for calculus, for flatulency and hysteric affections. Its *culture* is similar to the last, requiring a moist soil.

PENNYROYAL, (*Mentha Pulegium*.)—This is also a native of Britain, growing in watery pastures, and places subject to inundations. It was formerly called Pudding-grass, from the custom of using it in hogs puddings, which is not now so much practised. The origin of its name is uncertain, the herb was formerly called Puliall-royall. Its qualities are similar to the two last, being aperient and good for hysterical affections. *Culture*.—Similar to the two last, except that as its stems run on the surface of the bed, and root at every joint that touches the ground, they may be taken off with a knife, and planted in a bed of good loamy soil, in a damp situation.

PARSLEY, (*Apium Petroselinon*.)—This is said to be a native of Sardinia, whence it was introduced in 1548. Parsley is a very valuable article for culinary purposes, but it was much more used formerly than at present. Pliny observes, that, in his day, parsley was in great request amongst all classes of people, who took it in large bunches in their pottage. He says there was not a salad or sauce sent to table without it. It was also considered an excellent medicinal herb. Ancient authors tell us, that when fish became sickly in ponds or stews, it was a common practice to throw in parsley, which greatly revived them.

Culture and Propagation.—Parsley is propagated by seed, which should be sown in March or April; it remains about six weeks in the earth. The usual method is to sow it in small drills, rather less than an inch deep, and to cover it about half an inch with soil. It is best not to cut it until the plants become strong. There are three sorts cultivated in the garden, viz. Common, Curled-leaved and Hamburgh. The former of these has nearly given place to the curled sort, which may be grown to great perfection by careful selec-

tion every sowing. One method is when the plants have acquired five or six leaves to take up the best curled, shorten their roots to three or four inches long, and plant them on a bed eight or nine inches apart. In the autumn, make a selection from them, and transplant for seed. When they throw up seed stems, and it is not intended to allow them to seed, cut the whole row off close to the ground, and it will shoot up stocks, and in a regular close growth. To preserve it for seasoning, gather it on a dry day, put it in a tin roasting screen, and place it close to a large fire, till it becomes brittle; then rub it fine, and put it in glass bottles for use.

Hamburgh Parsley is chiefly grown for its carrot-shaped roots, which is drawn in autumn and winter for table; it may be sown on any dry mould, providing it be deep and not too rich. Thin it to nine inches apart. On the approach of frost, it may be taken up, and like carrots preserved in sand.

ARTICLE II.

OBSERVATIONS ON WATSON'S BEARDED RED HYBRID RHUBARB.

BY MR. HENRY DYSON.

IN venturing to affix a descriptive name to a valuable and highly esteemed culinary plant, but chiefly in presuming to call the attention of horticulturists to a new and decidedly superior hybrid Rhubarb, I claim their indulgence, from a conviction of my inability to do justice to the subject. Though I have applied the appellation "*new* hybrid," it is not strictly correct, since the plant has been known to a few individuals for forty years; but still its excellence is, I believe, almost wholly unknown beyond the confines of Yorkshire or its immediate borders. The term *new* is applied to it in consequence of this being, from what I can learn, the first public notice of it that has appeared.

The plant was originally raised by a Mr. Watson, either a physician or surgeon, at Pickering, in Yorkshire, about the year 1790. His attention was intuitively attracted to one particular plant, on a bed of seedlings, by its striking singularity, and its essential difference of conformation, as contrasted with every other plant on the border. It was planted out separately, and nurtured with more than common care. During the succeeding spring, if he felt gratified by its appearance a few weeks earlier than its compeers, he was not less

delighted by its delicious flavour, combined with an odorous acid yielding in fragrance only to the lemon. The third year it admitted of a sub-division, when one moiety was apportioned to Kirby-Hall gardens. During the following year, it was introduced at Thornville Royal, then the residence of Colonel Thornton, of sporting celebrity, from whence, about the year 1800, Mr. Seymour obtained a root, and transferred it to Carlton Hall, near Snaith, where it was propagated with such success that he was soon enabled to form a plantation, and to extirpate each and every other homogeneous variety. This course has been adopted not merely at Carlton, but in every garden into which Watson's hybrid has been introduced. In consequence of Mr. Seymour's liberality, it now predominates in all the best gardens of that district. Many individuals who possess this plant have expressed an anxious solicitude respecting its origin. This circumstance must be my apology for prolixity in its history.

I have applied the term *bearded*, as descriptive of one of its peculiarities; for on the early developement of its leaves, they exhibit a hairy appearance, not dissimilar to the first budding of a beard. This phenomenon extends over the entire surface of the foliage, and becomes gradually less manifest as the leaf expands. When fully extended, it assumes a bright surface, and a deeper hue of colour than any other variety.

The stalks are a deep bright red colour, both within and without, approximating to crimson. They maintain their colour throughout the process of cooking, thereby forming a desirable contrast with the pallid semblance of other varieties. Common Rhubarb, in its preparatory stages for the table, will, according to its state of succulency, dissolve, and form a syrup, in the proportion of from one half to two-thirds of its entire substance, whilst Watson's hybrid, under the like processes, forms a dense pulp, resembling the pulpy consistence of the best baking apples, with the exception of its rich inviting colour, and more odorous acid taste. The flavour of Watson's hybrid is directly opposed to any thing bitter or medicinal, and is eaten with avidity by many individuals, in a new unprepared state.

As to early production we cannot contrast Watson's hybrid with its rival "*Wilmot's*," though in other respects it acknowledges no rival. We are informed by Mr. Spring, of Temple-Bellwood, who cultivates Watson's hybrid extensively, that he has plucked it for use on the fifth day of March, without any forcing or other aid than the advantage of a south border. At Doncaster, in the spring of the present year, it was ready for use on the first of April, and I am willing to believe it will compete advantageously with *Wilmot's*. With

respect to its capability of prolific production, under proper management there will be no complaint, for I am persuaded it bears pulling better than any other variety; yet on account of its combined excellencies of fragrant flavour, and rich inviting appearance, it is commonly plucked too often and too closely. This plan necessarily causes the root to send forth feeble stalks, and as a remedy for this evil, I would recommend that no stalk be plucked off less than three-fourths of an inch in diameter.

This Rhubarb has a tendency to produce flower stems, particularly where plantations are not renewed every three or four years, a regulation which is very necessary when perfection of growth is the aim of the cultivator. Those flower-stems should be cut clean away, on their first appearance, for they are a draw-back on the perfection of the plant, and are neither ornamental nor useful, inasmuch as they never perfect seed, unless inoculated by the farina of other varieties which may happen to be growing contiguous to them; and even in that case, the seed invariably produces a bastard and inferior variety. Attempts have been made to raise seed from this hybrid, for a dozen years in succession, but always without success; and I am convinced it will never produce generative seed, except through the medium of inoculation.

One peculiar characteristic of Watson's hybrid, is the production of two separate and distinct crops in one year, from the same root. It may be plucked from the beginning of April to the latter end of May, when the principal part of the remaining stalks suddenly become spongy, the leaves fade, fall to the ground and perish, returning their nutritious juices to the parent root, the vegetative functions of which then become dormant for two or three weeks, but afterwards, with renewed vigour, push forth an abundance of leaves and stalks. These of course are unaccompanied by flower-stems, and may be reaped indefinitely through the summer, to be preserved with sugars for winter's luxury, due regard being paid to the dimensions of the stalks as above directed.

A plantation of this kind of Rhubarb is decidedly ornamental in a kitchen-garden; its growth is more vertical than other varieties; its bright deep shaded undulating foliage, contrasted with the numerous showered stalks, altogether form an interesting embellishment; so that it is not merely desirable, but when once possessed, will be found an indispensable requisite.

In preparing a plot of land for a plantation, whether the natural soil be sand, loam, or limestone, it should, if admissible, be trenched at least two feet deep; and, in situations where peat earth can be

readily obtained, these should be trenched in, and thoroughly inter-mixed, such a portion as would raise the ground six inches in height, together with an equal quantity of decomposed stable manure.— If the two latter ingredients had been thrown up together for six months previously, being mixed and thoroughly incorporated, it would be an additional improvement. The ground being thus prepared, mark out the rows four feet apart, then proceed to plant off-sets or roots containing two or three eyes each, allowing three feet between plant and plant. November is the proper time for these operations.

Many years ago, this hybrid Rhubarb was introduced into the gardens of the late Viscount Downe, where the same results followed as have attended its introduction at all other places; namely, the extirpation of every other variety, and its sole substitution. It appears that his Lordship was an admirer of its flavour, and esteemed its virtues, for he gave directions that his table at Cowick should be supplied with it in one form or other every day in the year. For this purpose, and to procure an early supply, it was forced in pits, on the principle of Mc' Phail. It was also preserved with sugar, as well as without sugar, after the manner of green gooseberries. The mode and detail of these processes, I leave to the sex to whom they properly belong.

A proof of its excellence and superiority may be deduced from a fact, witnessed in part by myself, namely, that a market-gardener, who was presented with a root, about two years ago, was enabled to exhibit Rhubarb at his stall a few weeks earlier than his compeers. The first bunch thereof being sold to the housekeeper of a resident gentleman, he observed her early punctual attendance, each successive market-day, on the opening of his stall, and her unvaried anxious enquiry for "more of that crimson Rhubarb." After a fortnight had elapsed his other varieties being plucked for market, and being mixed indiscriminately with the one which so much pleased the housekeeper, and which she denominated *crimson*, the gardener felt annoyed by her abstracting single stalks of it, from his several bunches, and laying them together. In reply to a remonstrance on this point, she said, "he might charge what price he pleased, if he would only permit her to take her own choice, *for she added*, the crimson ones really make the most excellent preserve I have ever tasted or seen!" Thus the market-gardener became acquainted with the importance of his new commodity, and it is almost superfluous to observe, that henceforward it was increased in price and doubly esteemed.

There are other details belonging to the forcing and management of Rhubarb, which have been ably discussed in this Volume, by Mr. Paxton; and as they apply equally to all varieties, it would be presumptuous for me to go over, or repeat them.

Baslow, July 16th, 1833.

ARTICLE III.

OBSERVATIONS ON THE NATURAL HISTORY AND CULTURE OF THE RASPBERRY, (*RUBUS IDÆUS*)

BY JOSEPH PAXTON F. L. S. H. S.

THE Ancients appear to have paid very little attention to the Raspberry. Pliny mentions it as of less importance than the bramble, stating that the fruit is smaller than the other bramble-berries. The flowers, tempered with honey, may be applied with advantage to watery and bloodshot eyes, as well as in cases of Erysipelas. Being taken inwardly, and drunk with water, it is a comfortable medicine to a weak stomach. The red Raspberry is a native of this country, it is found both in mountainous and low woods where considerable moisture abounds; in Wales, in Scotland, and many parts of England, particularly in the woods about Chatsworth, in some woods about Sussex, and on the sandy heaths of Wiltshire, particularly on the Longleat demesne. It is possible that the white variety was unknown to our earlier authors, for it is not noticed. Either in the writings of Tusser or Gerard, who both mention the red, the latter particularly states that "the taste is not very pleasant."

It is said that Raspberries do not undergo the acetous fermentation in the stomach. Hence they are recommended to those affected with gout or rheumatism. No home-made wines are so delicious to the taste as the one made from this fruit, except that made of strawberries. Dr. Short recommends both these wines in scorbutic disorders, as a purifier and sweetener of the blood. Mixed with water, they make a good reviving draught in ardent fevers.

The fruit are much used by distillers for making raspberry-wine, and raspberry-vinegar; they are often in request for confectionary and other purposes, as well as for dessert; for these latter purposes, the white or yellow is most esteemed.

In the northern districts of America, Nova Scotia, and New Brunswick, it dies down at the end of the year, and new shoots put

forth in spring much like fern. Those shoots bear the first year, though they do not come above ground till June. When the land is free from trees and the sun has shrivelled up all the leaves of raspberries, they form a sheet of red for scores of miles, and are food for the wild pigeons, &c.

BEST VARIETIES are the Red and Yellow Antwerp, Barnet, Bromley Hill, Cornish, and Double-Bearing. This last, however, is not remarkable either for size or flavour, its chief recommendation is, that a second crop may be produced in the autumn.

Culture.—They are propagated by suckers, and by seeds for new varieties. The suckers should be planted in rich moist soil, well manured, trenched at least two feet deep, and planted with vegetables two years before the raspberries are planted upon it. This may be done either in the autumn or spring, they should be planted in rows about four feet six inches apart, and three feet apart in the rows, and if it can be so managed three plants should be allowed to each stool, placing them in a triangle of six inches apart. These will bear some fruit the first year, and if the ground be suitable will produce plenty of strong rods for the following season. Nothing more is required till the winter pruning, when you must let all the shoots which bore fruit the previous summer be cut away close to the ground. Then cut away all the young shoots, except about nine of the strongest, or not so many if the stool be weak. Tie them together at the top, and then cut off about four or six inches from the ends. They may either be bowed so as to let the rods of two stools meet, which being tied together will form an arch, or they may both be left to stand alone. Take up all the suckers every winter with a spade, except such as spring immediately from, and are connected with the stool; manure the ground, and let it lie thinly spread upon the ground all the winter, until March, when you must prune as before directed, digging the ground and being careful not to injure the roots with the spade.

Although the Double-Bearing variety yields fruit in the autumn, yet the fruit is very inferior to that of the red and white Antwerp, and hence it is desirable to have a succession of this sort. This may be obtained by the following process. In the beginning of May, cut off the young fruit-bearing shoots, that are growing from the canes, to about two eyes, and from these two eyes they will throw out laterals, which will show plenty of fruit, and ripen in August and September. Another system is, that when the upper parts of the canes have grown considerably, the lower will have scarcely moved, and you must cut them about half way down, at least considerably

below where the buds have grown. These lower buds will then break and show fruit, which will ripen in August. Both these methods answer very well.

To secure a constant supply of fine fruit, it will be necessary to change the ground, and it must be prepared as before, for the old stools will not continue to bear well for more than eight years. When the old stools are six years old, plant the new plantation, which will then be in full bearing by the time the others are destroyed. You may greatly assist the growth of the young stems, which are to bear fruit the succeeding season, by cutting down to the ground the canes of the former season, as soon as they have done bearing, instead of allowing them to stand till winter or spring, the usual time of pruning. The young shoots are thus encouraged in their growth, and become well ripened.

Forcing Raspberries.—Take up some fine young plants, two years old, and place them in large pots filled with strong rich loam. About the beginning of November, set them in a warm sheltered situation, and if in the following month the weather be very severe, cover all the pots with littery dung, to prevent the frost from breaking them, or injuring the roots of the plants. In January, introduce them either into a peach-house or vinery, when they begin to grow, giving them as much air as they can conveniently receive, and let them have sufficient water, sprinkling it sometimes over the whole plant with a syringe. Thus treated, they will produce ripe fruit in April.

ARTICLE IV.—PLAN OF A PINE-PIT.

BY T. J. KNOWLYS, ESQ.

The former Figures, page 12, being cut contrary to the intention of the writer.

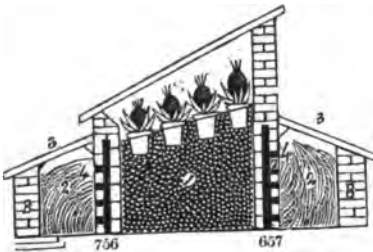
HAVING been some months from home, your numbers have not reached me regularly.

I observe some mistakes in the drawing of a pine-pit, which I sent you for your January number. The mistakes are of such a nature that a person might as easily raise jelly fish as pine-apples in a pit of that construction. I send you a corrected drawing. The chief fault is that the steam from the hot manure is made to enter the inner pit, which would have the effect of rotting the pines. It is the hot chamber surrounding the inner pit which keeps up the required heat.

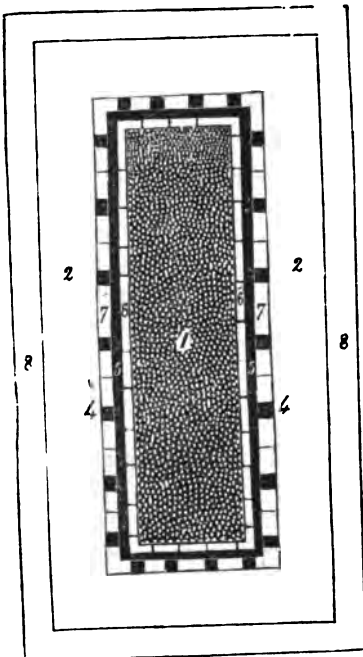
There is no necessity for the pipes, upon Mr. Knight's system, to form a warm atmosphere for pines, as the heat will naturally rise through the bark; but in forcing cucumbers, melons, or rhubarb, there must be fourteen inches of earth upon the bark, through which the heat cannot easily penetrate. To remedy that defect, two or three wooden pipes, either square or round, three inches diameter, may be laid in the bark, with pipes communicating with the atmosphere in which the plants are growing. Those pipes by being opened at pleasure are intended to regulate the heat.

Heysham, Lancashire.

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1. Pit filled with spent Bark.
2. Dung.
3. Covers of Wood.
4. Pigeon Holes.
5. Hot Air Chamber.
6. Bricks on Edge.
7. Bricks flat.
8. Outside Walls.



For other Particulars, see the Article, page 10, of the present Volume.

ARTICLE V.—TO DESTROY WOODLICE.

PERHAPS in cucumber or melon frames nothing is more destructive than woodlice. Confining a toad in the frame or pit is an effectual remedy for the evil, but many persons would think the cure as bad as the disease itself, for they would be unable to eat the produce, from the recollection that the toad might have touched them. One method pursued with success, is to make in the soil, close round the edges of the frame, a kind of hollow bason, about six inches wide, and to fill this up with short hay, to about the thickness of two inches. This, in the course of the first night, will become a place of retreat for them, and at about nine or ten o'clock in the morning, having opened the frame, pour upon this hay with a wide rose watering-pot, a considerable quantity of boiling-water. Then remove the hay and dead woodlice, and place a fresh supply of dry hay. Repeat this operation for two or three days, and you will see no more woodlice. Another system is to sink a pan, half full of water, in the soil, its rim being level with the surface, then to throw in a few slices of ripe fruit, and place a slate or piece of pot over it, leaving only sufficient room for the entrance of the depredators. Examine this every morning, and destroy all such as are found therein. The pan may also be filled with hay, and pieces of fruit, such as apricot, &c. being laid in, they will quickly entice these depredators, which on removing you may destroy. Another very effectual method, is, to slice the tuberous roots of the Bryony (*Brionia dioica*) a well known plant, and very common in our hedges, and to put a few of these slices into a common feeder, covering them over with a little moss or short hay, and placing them in different parts of the beds. Take out the pans the next morning, and after having removed the moss and baits, cast the woodlice into boiling-water. Possibly no method will be found more effectual than the one noticed Vol. 1, page 16.

ARTICLE VI.

ON THE CULTURE OF THE HYDRANGEA HORTENSIS.

BY W. B. J.

THOSE who adopt the method of Mr. Cruickshank, gardener to Sir George Beaumont, Coleorton, in the culture of this plant, will not fail to be amply rewarded by its success. The plan is to take cut-

tings in July or the beginning of August from some old plants, suckers will do, though I should prefer cuttings, as not being so apt to throw up suckers. Place half a dozen in each forty-eight sized pot, the extent of the place must be considered in determining the number of plants intended to be raised. Two dozens will look very well all through the summer, in a middle sized greenhouse. The soil in which I pot them is half loam with leaf-mould and manure. As soon as the cuttings are potted, I give them water, place them in a mild heat, inside a frame, and keep the principal heat of the sun from them until they possess roots. They may be placed along the side of a north wall, with a hand-glass over them, and as soon as they are tolerably rooted, they should be potted singly into sixty's. From thence they may be removed and exposed to the open air, taking care that they have not too much rain to rot the roots. Place them in the greenhouse in the month of September, and if they have a good situation, at the warmest end of the house, as similar deciduous trees, they will retain their foliage. At the beginning of January, place two dozens in the pine stove, and as soon as it is evident which will flower, pot them into forty-eights and reject the others. Those which remain in the stove should be placed near the glass, allowing them as much light and air as convenient until the flower begins to assume a pink colour and to expand. Thence remove them into the greenhouse. The head, magnificent with flowers, will be very fine all through the summer, and a succession will be brought forward every month. How frequently they are seen in a large peck pot, perhaps with a dozen heads of flowers. This system may cause the plants to exhibit a splendid appearance, but they are not so handsome or neat as those with a single head over a small one, from one foot to one and a half in altitude, including the pot, and the perimeter of the head two feet. The dwarfish character of the plants adds chiefly to their beauty, together with the extent which each flower attains. When suckers issue, clear them away, for they greatly diminish the size of the flower. Perhaps this process may be new to some of the readers of the *Horticultural Register*.

My motive for sending the particulars is to induce other young gardeners to offer their opinions, with a view to the improvement of any tree as common as the *Hydrangæa Hortensis*.

Ashby de la Zouch, July 1st, 1833.



CONQUEROR OF EUROPE AURICULA.

ARTICLE VIII.

DESCRIPTION OF A NEW GREY-EDGED AURICULA,

CALLED WATERHOUSE'S CONQUEROR OF EUROPE,

With some Observations on the Culture of Auriculas.—By the Conductor.

THIS new Auricula is certainly a very splendid variety. It was exhibited, for the first time, at Sheffield, May 8th, 1833, and it was confessed that it far surpassed every other grey-edged auricula hitherto raised. Its flowers are nearly the size of a crown piece, the petals are large and even, each consisting of seven segments, which are well rounded, and lay quite even and flat, requiring neither the application of an instrument, nor any other correcting than the removal of some of its pips. The markings of the segments greatly resemble each other, exhibiting a beautiful symmetry. The tube is finely rounded, and of a bright yellow, so also are the anthers; and the pistil is pure white. The ground colour is a dark crimson velvet, surrounded with a bright green edge, and white border, lightly sprinkled with powder. If well grown, it will not fail to obtain the first prize, wherever it is exhibited. It was raised by Mr. Waterhouse, Florist Lodge, Lady's Walk, Sheffield, from whom it takes its name. We believe the proprietor has a good stock of strong plants, two years old, which, as we understand, he proposes offering at thirty shillings each. They are in pots, and as they will be sent packed in boxes, they will no doubt be conveyed safely to any distance. The possessor of this plant is a most excellent grower of most florists flowers, and particularly of auriculas.

Observations on the Culture of Auriculas.—It is evidently as important for a cultivator to know the climate and altitude natural to a plant, as the soil in which it will grow, for if the latter be ever so suitable and the natural temperament be not agreeable, the plant will never grow to any degree of perfection. The name *Primula* was derived from *primus*, first in allusion to its early flowering, and *Auricula* from *auris*, an ear, on account of its leaves bearing a resemblance to the ears of an animal, the ancients fancying that they resemble the ears of a bear. Hence they called it *Auricula ursi*, by which name it was known in Miller's time. It is a native of the mountains of Switzerland, Austria, Syria, and the Caucasus. It is a plant of considerable importance amongst Florists, who grow it to great perfection. From what has been said on the subject in Vol 1,

page 56, by Mr. Revell, and by Mr. Warris, page 349, little more remains to be added.

With regard to sowing the seed, it may be observed that, many persons make a practice of deferring this operation till January or February, and recommend that the seed, when gathered the previous summer, be dried and kept in a dry room till used. Others suggest the keeping of it in a damp room, and think it comes up a fortnight sooner than when kept dry, whilst not a few sow it immediately after being gathered. Our own observation inclines us to recommend the latter plan, as being likely to produce the finest plants in the shortest space of time. Prepare the pans and soil after Mr. Warris's plan, page 349, Vol. 1, then gather the seed-pods, rub the seeds out on a piece of paper, and sow them immediately, sifting through a very fine sieve just enough mould to cover the seeds. When sown, there will be no necessity to take them into the greenhouse or frame, because this will occur at a season of the year when shelter is unnecessary, except from heavy rains, which would wash the seed away. If the pots be set in a shady situation, on an eastern or south-eastern aspect, they will be up in about three weeks, and in November will be ready to transplant. They may then be removed to a frame or other shelter for the winter, but let them be transplanted in the way recommended by Mr. Warris. With regard to suitable soil, those who use only such as is rich, wholesome, and porous, of simple mixture, usually have the best success. Bone-dust is a most excellent ingredient to mix with auricula soil, and its decomposition being slow, its volatile alkali passes off slowly, which is very advantageous, as the stimulus is thus of long continuance. Some good new turfy-loam, well rotted, with vegetable mould, either made from leaves or gathered from the interior of a hollow tree, besides river sand, well rotted horse-dung, and such like, (see Mr. Revell's composition, Vol. 1, page 56,) together with a little bone-dust, are all the ingredients necessary to grow them to the greatest perfection. Sugar-bakers' scum is an excellent manure, see Vol. 1, page 847, but it cannot be safely employed until all its pernicious qualities have been totally subdued. In using bone-dust, a very small portion of lime will be of great utility mixed with it in the soil, as the animal matter would by this means be decomposed and immediately fitted for the use of plants. Bone-dust cannot be too highly recommended as a manure, for we have seen its good effects in vine borders more than once. Thus much for the compost; our floricultural friends will now probably allow us to throw out a few hints to the uninitiated, on the manner of packing up Auriculas when in blow to be sent to a

distance. Many experienced florists place the flowers in perfect darkness for two or three days previous to their being shown, and usually in a cellar, fixing the cut flowers in bottles, and often changing their water. This is found to improve their colours wonderfully, the reason of which we should be glad to have explained by any of our chemical correspondents. In sending flowers in pots to a distance, a light box being made (Fig. 51,) to fit the pot, place some moss betwixt the pot and sides of the box to keep it from breaking, bind some upon the top to keep the soil from falling out, and tie the flower to a stick to preserve it from shaking. Then take two pieces of wood (*a*, *b*,) just the length of the distance betwixt the pot and the lid, place them upon the edges of the pot close to the side of the box, nail them fast to the lid, after it is placed on the box, and the lid being well fastened down, with common care, no injury whatever can happen to the plant.

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ARTICLE IX.—ON PRESERVING GREENHOUSE PLANTS THROUGH THE WINTER.—By T. W. H.

HAVING a small collection of the hardier greenhouse plants, I should feel obliged, if any of your valuable correspondents, would point out an easy method of preserving them through the winter months in a thriving state. The parlour, I find, keeps them alive, but the plants require the whole summer ere they resume a healthy appearance. A temporary shed, with hot-bed glasses for the roof, and heated with dung, of which I have full command from any farm yard, I suppose might be easily planned by any one conversant with the management of hot-beds. I wish the least possible out-lay and risk, having only a lad and myself to manage the garden. Can you mention the best work on the management of bees useful and fit for a farmer's garden? Accept my best thanks for the rhubarb-seeds, which I highly prize, and hope from present appearances to enjoy the benefits of your kindness. In answer to a remark of your correspondent C. C. C. C. I have many plants of the Berberry, in my fences, and I shall take due pains to observe the effects on the wheat.

RURAL AFFAIRS.

ARTICLE X. DESIGN FOR AN OLD ENGLISH GATE LODGE. BY A. B. L.

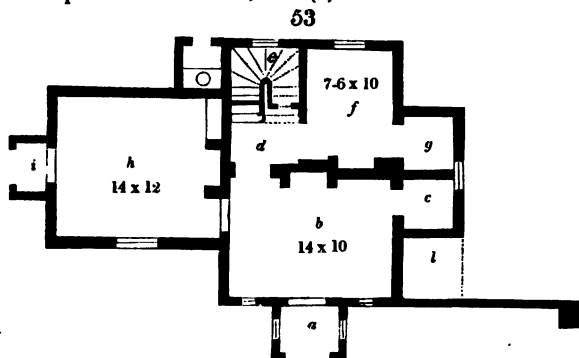
THE situation of the entrance gate and lodge to a country residence, must depend chiefly upon the locality of the place, but frequently upon the judgment of the landscape gardener in adopting the proper situation, with reference to the park, and for the approach road. The picturesque appearance, however, of the lodge, must depend on the artist's skill as an architect. The eye of taste is frequently offended by the shapeless, cold, and uninviting appearance of the gate lodge, which bespeaks poverty and a want of enterprize in the owner; and we are ready to turn away from it under the impression that if we approach, our welcome will be but cold and heartless; while, on the other hand, the neat, light, picturesque lodge, invites the visitor to enter the abode of cheerfulness and plenty. But the architect, or landscape gardener, with superior taste, unless balanced by an equal degree of judgment, is as liable to err in erecting a fine lodge as an unseemly one. It is the mansion that must determine the magnitude, the style and character of the lodge; for when we enter by a fine architectural gateway, approach the road by many windings and turnings, and the plain, unrelieved, white-washed, cubical-shaped mansion bursts upon our view, we feel the sensation of disappointment as keenly as in any case of anticipated pleasure denied us.

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The gate lodge may be applied in different ways: either by being united with the gate, and having a lodge on each side, with footways, and forming one architectural whole by a single lodge joined to the gateway, or by a detached lodge. In the latter case, the gate itself should be of course a subordinate object. The double lodge gateway would be best applied to palaces and large mansions; and the single

lodge gateway, and the detached lodge and gate, would suit small mansions and villas. The accompanying sketch of a detached lodge, (Fig. 52,) after the old English manner, would be suitable for a small villa in the Elizabethian, or any other old English style. The ground plan (Fig. 53) has an entrance-porch (*a*); gate-keeper's sitting-room (*b*); closet for tools, &c. (*c*); lobby and stair-case (*d*); closet under the stairs (*e*); back-kitchen for cooking and washing, as (*f*); pantry (*g*); parlour, with a cupboard beside the fire-place (*h*); trellis work porch communicating with the garden (*i*); water-closet (*k*); and open shed for wood, &c. (*l*).



Scale, $\frac{1}{8}$ of an inch to ten feet.

In the chamber floor, there is a bed-room for the man and wife; and two smaller bed-rooms for male and female children. The walls of this building may be of brick-work, rough cast externally; and the roof covered with reeds in the usual manner; or, perhaps, slates or painted tiles would be preferable, though not so characteristic, as being less liable to accident by fire. The barge boards and pendants should be of oak, or at least wood-work painted to imitate that material. The windows to have wooden mullions as shewn by the elevation painted of an oak colour; and the exterior doors to have the old English character, which may be done by nailing square pieces of wood diagonally on the outer surface, to imitate the heads of large nails. This lodge if neatly finished internally, would make a comfortable little habitation; and if erected in the manner above described, about twenty miles from London where labour is cheap, the expense would be about £186. There should of course be a little garden behind the lodge, to supply the occupants with vegetables; and the border immediately round the house might be tastefully laid out with flowers, both for the sake of neatness, and the pleasure and instruction it would afford to the gate-keeper and his family.

NATURAL HISTORY.

ARTICLE XI.—THE DOUBLE-STOCK, CAUSED BY DISEASE.

BY MR. WM. PHILLIPS.

“ Intemperance

In meats and drinks, which in the earth shall bring diseases dire.”

PLANTS are so far assimilated to the animal creation as not only to be subject to disease, when over stimulated with food, but the disease or deformity in the vegetable kingdom is carried on from generation to generation. So in the human race the hectic blush sometimes marks a whole family afflicted with pulmonary disease, though in others it settles only on one or two members of the family, and it sometimes passes one generation and afflicts the next race. So also in disorders of the brain, the lurking malady passes from family to family, tainting one member in his own person and another in his progeny, till the disease has destroyed the race or is itself overcome by some happy accident of nature.

Now the double-stock, having its seed vessels and parts of fructification transformed into petals, either by a diseased seed or excess of nourishment caused by rich earth, cannot perform its duty to nature by replenishing its species by seed. This beautiful though unnatural flower would therefore soon become extinct, were not florists careful in sowing the seeds of the single or natural flowers growing near those which have double blossoms. On examining a number of the double blossoms, we sometimes find a single anther concealed between the petals, the fecundating properties of which, although as infinitely small as pestilential particles in the air, are sufficient to carry disease to every pod of seed, the stigma of which it shall have passed over either by the aid of the air or the accidental assistance of insects. Bees and other insects, which live on the nectar of plants, seldom rest on flowers that have become so double as to exclude the parts of fructification, because there is no honey or nectar where there are neither anthers nor stigma. But if a single anther be growing in a double flower, the bees are sure to discover it, and thus they convey the pollen to more perfect plants, since Nature who is so perfect in all her works, has not inclined the bee to luxuriate indiscriminately from flower to flower of different generas, for then would the pollen of the melon be washed on the stigma of a rose or of a poppy ; but these industrious insects may be watched from blossom to blossom of every variety or species of a plant without touching on one of a

different family. Thus one bee will be seen collecting from the natural order Cucurbitaceæ, whilst a second is rifling that of Rosaceæ, and others that of Labiatae, &c. and Jussieu himself is not better acquainted with the affinities of plants than are

“the honey bees,

Creatures that by a ruling nature teach the art of order.”

Antheum, 1833.

ARTICLE XII.

TREES, EXCELLENT CONDUCTORS OF LIGHTNING.

BY PHILALETES.

YOUR correspondent Mr. Jas. Frost, at page 315, Vol. 2, disputes the judgment of “Omega,” at page 739, Vol. 1, on the conducting properties of the beech tree.

I am induced to send you the following remarks to correct the erroneous statements referred to, and to prevent those who may be as unacquainted with the *conducting* properties of *all* trees, as the writers of the two articles, from falling victims to the effects of lightning, by sheltering under a beech tree, during a thunder-storm.

All finely pointed conductors of electricity receive the electric fluid, with *much greater* facility, and at *far greater* distances than those whose projections are obtuse. Hence large trees with their numerous pointed leaves, are grand receptacles for the discharge of electric clouds; and we frequently hear of the lordly mansion remaining uninjured, while the towering poplar and stately pine, which raise their pointed tops above the towers and battlements of the majestic castle, are rent in pieces. The foliage of *all* trees, has very nearly a like conducting property, but the *form* of the tree is the principal cause why one *kind* is more frequently injured by lightning than another. The ash, the oak, the pine, and the poplar are lofty, and their branches are more erect than the beech and some others, consequently, when they receive an electric charge, if their boles or trunks be dry and harsh, (as is generally the case in summer,) the fluid cannot pass off to the ground, therefore the branches will be severed from the trunk with a force proportionate to the accumulated electricity, and the separated parts will carry off the fluid to its common receptacle the earth, from which it originated; but if the graceful beech receive the charge, the fluid darts to the earth,

from the under branches which *generally* very nearly salute the ground; hence the tree remains unhurt. Thus "Omega" may learn why *beech trees* are generally preserved from destruction by lightning; and Mr. Frost may be informed that when a powerful accumulation of electricity is conveyed into dry earth, for the want of a conducting medium, an explosion will take place, and destruction must be the result; hence the reason why conductors attached to buildings, should have their terminations conveyed into *water*, or *very moist ground* at some distance from the buildings; and hence the reason why the tree referred to in Mr. Frost's paper, was torn up by the roots, if it stood in a dry situation; for, if the fluid conveyed down the trunk and leaves to the earth, seized upon the roots, (they being a better conductor than dry soil) a discharge might take place that would be sufficiently powerful to tear the tree from the earth.

The reason why persons and animals suffer from sheltering under trees during a thunder-storm, is owing to their being better conductors than the dry trunks of trees; consequently, if their bodies come nearly in contact with the under branches, they become a ready medium for conveying the fluid to the earth, but owing to the non-conducting property of the general clothing of either men or animals, it is not conveyed with sufficient facility to the earth to prevent destruction.

Sheffield, August 1st, 1833.

ARTICLE XIII.—ON THE SCIENCE OF BOTANY.

BY MR. F. F. ASHFORD.

ON PAPILIONACEOUS OR BUTTERFLY-SHAPED FLOWERS.

IF your readers will still join me in the pursuit of so delightful a study, I will resume the subject and endeavour to describe six of the tribes first, in order to render the general structure of the characteristic parts of plants familiar.

Peas being at present in full fructification, you must seize the moment to observe their characters, for they are of the most curious that botany affords.

The flowers of this tribe, being of a very particular structure, you must not only take several pea-flowers, and dissect them successively, to observe all their parts one after another, but you must notice the progress of the fructification from the first flowering to the maturity of the fruit. And in the first place, you will find a mono-

phyllous calyx, that is one of an entire piece, ending in five very distinct points, the two wider of which are at the top, and the three narrower are at the bottom. Having examined the calyx, you may pull it off, so as to leave the rest of the flower entire. Then you will see plainly, that the corolla is polypetalous, the first piece is a large petal covering the others, occupying the upper part of the corolla, and called the standard (*vexillum*) which appears designed to protect the rest of the flower from the principal injuries of the weather.

The standard being taken off, exposes to view those two side pieces to which it adhered, and these are called wings (*ala*.) These wings are scarcely less useful in protecting the sides of the flower than the standard is in covering it.

Taking off the wings, you discover the last piece of the corolla, called the keel (*carina*.) This covers and defends the centre of the flower, and wraps it up underneath as carefully as the three other petals envelope the upper part and the sides. This last piece is as it were the strong box, into which nature has put her treasure, to keep it safe from the attacks of air and water.

When this petal is well examined draw it gently downwards, pinching it lightly by the thin edge, for fear of tearing away what it contains. I am certain you will be pleased with the mystery, when the veil is removed. The young fruit involved in the keel is constructed in this manner; a cylindric membrane, terminated by ten distinct threads, surrounds the germ or embryo of the legum or pod. These ten threads are so many filaments united below, round the germ, and terminated each by a yellow anther, whose farina covers the stigma which terminates the style, or grows along the side of it. This stigma, though yellow with the meal which sticks to it, is easily distinguished by its figure and size.

Thus these ten filaments form also about the germ an interior armour to preserve it from exterior injuries.

The legum or seed-pod is distinguished from the silique of the cruciform tribes, by the seed being fastened only to one side of the case alternately to each valve of it, but all of them to the same side.

If I have made myself clearly understood, it will be perceived what astonishing precautions have been taken by the Author of nature to bring the embryo of the pea to maturity, and above all to protect it, in the midst of the greatest rains, from the wet which is fatal to it, without inclosing it in a hard shell, which would make it another kind of fruit. The Creator, attentive to the preservation of all beings, has taken great care to protect the fructification of plants from attacks that may injure it, and particularly those which are for

the nourishment of men and animals as the greater part of the leguminous or pulse tribe. The flowers have the name of papilionaceous, from a fancied resemblance to the form of a butterfly, (papilio.)

ON LABIATE AND PERSONATE FLOWERS.

The flowers which I have hitherto described are polypetalous, and yet I ought perhaps to have begun with the regular monopetalous flowers which have a more simple structure, but it was this very simplicity which discouraged me.

Among the irregular monopetalous flowers, there is a tribe whose physiognomy is so marked that we can easily distinguish them. It is that to whose flowers Linneus has given the name of ringent, because they are cut into two lips, the opening of which either natural, or produced by a slight compression of the fingers, gives them the air of a gaping mouth. This tribe is divided into two branches, one of labiate or ringent flowers, properly so called, and the other of personate or masked flowers. The character common to all the tribe is a monopetalous corolla cut into two lips, the upper called the casque or helmet, the lower the beard; four stamens, almost in the same row, distinguished into two pairs, one pair longer and the other shorter. The inspection of the object itself will explain these characters better than can be done by the pen. Let us begin with the labiate ones, and for example take the white dead nettle, (*Lamium album*) which, notwithstanding its name, has no affinity with the other nettles, except in the shape of the leaves. This plant is so common every where, and continues so long in flower that it is no ways difficult to find. It bears a monopetalous labiate corolla with the casque arched, in order to cover the rest of the flower, and particularly the stamens which keep all four of them close under cover of its roof. The longer and shorter pair will be easily discerned, and in the midst of them the style of the same colour, but distinguished from them by being forked at the end, instead of bearing an anther like the stamens. The beard bends back or hangs down so as to expose the inside of the corolla almost to the bottom. In this genus the lower lip is divided lengthwise in the middle, but that is not general in the tribe. The corolla, when pulled off, is open at the bottom, because it was fastened to the receptacle so as to leave a circular opening by which the pistil and what surrounds it may grow up within the tube. That which surrounds the pistil in the labiate tribe is the rudiment of the fruit, consisting of four embryos, which become four naked seeds that are without any pericarp or covering, the monophyllous calyx, divided into five segments, serving this purpose,

so that the seeds when they are ripe are detached, and fall to the ground separately. These are the characters of the labiate tribe.

The other section, which is that of the personate flowers, is distinguished from the former, by having the two lips not usually open or gaping, but closed or joined as in snap-dragon *Antirrhinum majus*, or for want of that in the toad-flax (*Linaria vulgaris*) a yellow flower with a spur very common at this season. But a more precise and certain character is, that instead of having four naked seeds at the bottom of the calyx, like the labiate flowers, these have a capsule or case inclosing the seeds, and not opening till they are ripe, in order to disperse them. To these characters we may add, that the greater part of the labiate plants are either strong smelling and aromatic as marjoram, thyme, basil, mint, hyssop, lavender, &c. or else strong smelling and stinking as the dead nettle, hedge nettle, cat mint, black horehound, &c. Some few only have little or no smell, as bugle, self-heal, and hooded willow herb, whereas most of the plants with personate flowers are not odorous, as snap-dragon, toad-flax, eye-bright, lousewort, yellow-rattle, broom-rape, and fox-glove. If our readers would try to settle the branch or section by its physiognomy, and exercise themselves, the exterior form of the corolla may be some guide to those who wish to judge at sight whether a flower be labiate or personate, which they may verify afterwards by pulling out the corolla and looking at the bottom of the calyx. Labiate flowers will show four naked seeds, and personate flowers a pericarp.

June 18th, 1833.

ARTICLE XIV.

ON THE PROXIMATE CAUSES OF WINDS AND STORMS

BY PROFESSOR MITCHELL.

THE four following propositions may be regarded as statements of general facts, which have been sufficiently established by numerous observations in various parts of the world.

1st. That part of the great ocean which lies between the thirtieth parallel of latitude on both sides of the equator, is constantly swept by a wind varying but a few points from the east.

2nd. Between the latitudes of 30 and 60 degs. in both the northern and southern hemisphere, westerly winds predominate over those from the east quarter, in a ratio probably somewhat greater than that of three to two.

3rd. There is in all latitudes (a few trades of limited extent where local causes have a decided effect excepted) a predominance of winds blowing from the poles towards the equator, over those moving in the opposite direction, but this predominance is not so well marked and decided as that of the westerly over the easterly winds, between the latitudes of 30 and 60 degrees.

4th. During the warm weather within the temperate, and at all seasons within the limits of the torrid zone, the fall of rain is often accompanied by lightning, thunder, and violent winds, constituting what is commonly called a thunder-storm. Thunder-storms generally commence between mid-day and sun-set, and move from west to east.

Other general facts might be added, but these are such as require to be viewed in connexion with the laws which regulate the movements of the aerial currents over the surface of the globe, and the origin of those currents are to be investigated. The truth of the statements contained in these propositions will first be shewn, after which an inquiry will be instituted respecting the causes by which the facts asserted in them may be supposed to be produced.

1. That part of the great ocean which lies between the thirtieth parallel of latitude on both sides of the equator, is constantly swept by a wind varying but a few points from the east. The direction, velocity, permanence, and other characters of the trade-winds, are too well known to require any particular remark. They are affected by a number of local causes. Near the equator they blow from the east point, but at a distance from it. Their course becomes inclined to the parallels of latitude, so as to be at length from the north-east and south-east, near their northern and southern limits. Their force and direction are also influenced by the proximity of islands and continents. Along the western side of Africa their direction is reversed; to the distance seaward of about three hundred miles, they blow towards the land, and nearly at right angles to the coast. Halley notices a tract between the fourth and tenth degrees of north latitude, and the longitudes of seventeen and twenty-three degs. "wherein it were improper to say shore is any trade-wind, or yet a variable one, for it seems condemned to perpetual calms, attended with terrible thunder, lightning, and rains, so frequent that our navigators call this part of the sea the rains. The little winds they have are only some sudden uncertain gusts of very short continuance and less extent, so that sometimes each hour there is a different gale, which dies away into a calm before another succeeds; and if a fleet of ships be in sight of one another, each will have the wind from a dif-

ferent point of the compass. With these weak breezes, ships are obliged to make the best of their way to the southward, through the aforesaid six degs. wherein it is reported some have been detained whole months for want of wind."

Instead, however, of being confined to these longitudes, it would appear that either a total cessation or a remission of the force of the trades is observed between the latitudes specified throughout nearly the whole extent of both the Atlantic and Pacific; the effect being, however, more distinctly marked and perceptible in the former than in the latter ocean. "The southern-trade wind being cooler in like latitudes than the northern, usually passes the equinoctial into the northern hemisphere. The northern-trade wind falls considerably short of it, as earlier attaining the maximum of heat. Between them is the region of variable winds, light airs, and calms, attended with frequent squalls and rains; an uncertain wavy zone lying between the times of their influence. It is the tract in which the highest temperature prevails throughout the year; not at the equinoxes only, the sun being then vertical, but also when he is distant at the tropics.

II. Between the latitudes of 30 and 60 degs. in both the northern and southern hemisphere, westerly winds predominate over those from the east in a ratio probably somewhat greater than that of three to two.

Daniell states that, "in Great Britain, on an average of ten years, westerly winds exceed the easterly in the proportion of 225 to 140." The *Meteorology of Cotte.* in three Volumes 4to. specify in the last volume, that, generally, in the central and western parts of Europe, and in some parts of Asia, westerly winds prevail. This is the case in most parts of France, at Amsterdam, Berne, Berlin, Stockholm, St. Petersburg, Aleppo, Bassora, and Bagdad. Copenhagen is the only European capital of which an account is given where this is not the case. The wind is inclined to west at Paris, Young's *Philosophy*, Vol. 2, p. 255. See also *Annals of Philosophy*, for July, 1822, where it is stated that, at St. Petersburg, from 1772, to 1792, to which period, with the addition of 1818 and 1819, the observations are confined, "the west wind prevailed the most, and the south wind the least." The numbers expressing the ratios of the winds from the different quarters are not given, except for the year 1818, when the westerly winds were to the easterly as 178 to 111.

Westerly winds predominate over those from the east quarter within the limits of the United States. See the different meteorological tables furnished for publication in the former numbers of this

Journal, by Messrs. Beck, Field, Hildreth, Hitchcock, and especially the abstract of the meteorological registers kept at the several military posts of the United States, drawn up by Dr. Lovell, and inserted in the 12th Volume, page 153, when the westerly are to the easterly winds, for a term of four years, in the ratio of 12.59 to 9.63. That west and south-west winds prevail in that part of the Atlantic ocean which lies beyond the northern limit of the trade-winds, is so well known, that quotations in proof of it can hardly be necessary. See Broditch's Navigation.

Commodore Kreisenstern, as quoted by Wallenstein in the Boston Journal of Philosophy, Vol. 3, page 282, states that "in the Pacific ocean from latitude 30 degs. to the pole, the variable winds are generally from the north-east and south-west." The following statements are from Encyclopædias and other compilations. During a term of sixteen years, the westerly were to the easterly winds in Russia as 172 to 106. East winds prevail in Germany, west winds are most frequent on the north-east coast of Asia. In Nova Scotia, north-west, and at Hudson's Bay west winds blow for three-fourths of the year. Our information respecting the winds of the southern hemisphere is less ample. Cape Horn (lat. 56 degs.) has long been infamous amongst navigators for the violent westerly gales that prevail there, rendering it sometimes almost impossible to sail round from the Atlantic into the Pacific. (See Stewart's Journal.) "The prevailing winds of this region are heavy gales from the west, the direct course to be steered in passing the Cape, and ships are often detained by them three times the period we have been (twenty-one days,) and meet with weather far more dangerous and severe; so much so, that many vessels, after striving in vain for weeks to make a passage into the Pacific, have been at last obliged to bear away for the Cape of Good Hope, and make their voyage across the Indian ocean." In an account of the Falkland Islands by William Clayton, Esq. inserted in the Philosophical Transactions for 1776, it is stated that "the prevailing winds are from the south to the west for two-thirds of the year, and in general boisterous and stormy." "In the southern Atlantic, at the extremity of South Africa, the winds are periodical, consonant during summer to the south-east trade, which constantly blows on each side of the promontory; but conforming in winter with the western winds that prevail at all times in the Southern ocean. In other words, the fluctuating boundary of the western current of air touches upon the extremity of the African continent in winter, and recedes from it in summer."

(To be Continued.)

ARTICLE XV.

COLLECTIONS AND RECOLLECTIONS.

CUTTING UNRIPE WHEAT.—The cutting of wheat eight days before it is ripe, secures it from accidental loss by shaking, the grain is of a finer quality, but the quantity per acre, *by weight*, is *less*; still the quantity of flour is greater, for the deficiency is in the bran. Wheat so cut appears to be equally liable to attacks from the weevil as that which is cut ripe.

T. K. SHORT.

Martin Hall.

THE APPLE.—If the branch of an apple-tree be taken off whilst it is in blossom, and immediately planted in swampy ground, it will take root and bear fruit that season. This mode has been tried with success; therefore, it is probable that the branch of a pear, peach, plum, mulberry, or any other fruit tree, if taken off in spring or summer, whilst the tree is in full sap, will also take root, and become a new tree. Thus, choice sorts, such as the old nonpareils, golden pippins, &c. may be for ever sustained.

HENRY BROOKE.

THE BEECH TREE, (*Fagus sylvatica*.)—In Tennessee, which comprises a province of very considerable extent in America, the Indians, on the approach of a thunder-storm, during their hunting expeditions, immediately discontinue the chase, and seek shelter under the branches of the beech-tree, till the storm is over, with the most perfect confidence, arising from the knowledge, that that particular tree is exempt from being assailed by the electric fluid. This fact, which has been supported by my own observation, especially in this country, I make no doubt will sooner or later be confirmed by some of your transatlantic correspondents. I have not the pleasure of the acquaintance of Mr. James Frost, whose notice respecting the circumstance of two beech-trees having been struck by lightning in Cornwall, appears at page 315, and therefore cannot tell whether he possesses any very accurate knowledge of trees. There are several trees, which to the casual observer, bear some resemblance to the beech, and it may not be improbable, that those which Mr. Frost alleges, as having suffered from lightning, have borne some similitude to the beech-tree. The theory which could sanction the idea, that the elements act differently, on objects or substances, in different countries, must be absurd in the extreme; consequently, if the beech-tree is exempt from the injurious effects of lightning in America, it must be equally so in this country.

OMEGA.

PART II.

REVIEWS AND EXTRACTS.

REVIEW.

A PRACTICAL TREATISE ON AGRICULTURE,

Briefly pointing out certain practices to be adopted, and some to be discontinued,

WITH A VIEW TO THE IMPROVEMENT OF ARABLE LAND, &c.

Pamphlet.—52 Pages.

BY RICHD. W. LLOYD, ESQ. WHITTAKER AND CO. LONDON.

THE intention of the Author of this Pamphlet is to supply those uninitiated in the art, with a plain and simple exposition of the principles of practical agriculture, of which great numbers are to this day almost entirely ignorant. From what we know of the subject, we think the mode he has adopted is likely to be successful. The Author, after a few preliminary observations, treats on Ploughing and Cleansing Land, and on the Rotation of Crops, whereon he remarks that for heavy land the most judicious crops are wheat, cabbages, beans, oats, and clover; for light and dry soils, vetches, barley, buck-wheat, all the variety of the green crop tribe, and most of the various kinds of grasses. In a rich loam, which is of all descriptions of land the very best, any of the above-mentioned plants will thrive well. He next proceeds to remark on the value and profit of different plants, and the winter vetch, in his opinion, stands unrivalled, not only as it regards present profits, but as a great improver of the land. Turnips come next, being considered preferable to either mangel-wurzel, carrots, or parsnips. The two sorts chiefly recommended are the Swede and Yellow Scotch.

The Pamphlet treats on Mangel-Wurzel, Carrots, Cabbages, and Potatoes. Under the latter head is introduced the comparative value and produce of potatoes and turnips. A crop of potatoes is considered very good, when an acre yields 400 measures. One measure weighs 105 lbs. which multiplied by 400 makes a total of 42,000 lbs. This divided by 2,240 lbs. being one ton of 112 lbs. to the cwt. shews the produce per acre to be 18 tons 1780 lbs. we may say 19 tons. And what is this in comparison with the weight of an acre of Swedes or other turnips? The crop is but an ordinary one, if it do not weigh 30 tons, for this weight may be easily obtained; and, from such land as would yield 400 measures of potatoes per acre, much more than 30 tons of turnips might be got. As food for cattle, sheep, and hogs, turnips answer the best. All kinds of stock will eat them without tiring, which certainly is not the case with potatoes, and added to this, potatoes are in their nature heating. The expenses of planting and gathering potatoes are more than double the cost of turnips, which leaves a

material difference in the profits of the two crops. The Author also treats on Buck-wheat, on Corn, on the summer following, which he justly deprecates, on Laying down Land to Grass, on Lucerne, on the Raising and Application of Manure, and lastly, he concludes by summing up the whole after this manner. The *first* rule for a farmer should be not to take two successive crops of corn from the same field, if he can possibly avoid it; certainly never three: his *second*, to substitute some or other of the ameliorating crops, and sow either peas, beans, vetches, buck-wheat, turnips, cabbages, potatoes, or mangel-wurzel, between every crop of corn: his *third*, never to sow on foul land: and, though last, not least, his *fourth*, to be vigilant, honest, and industrious, &c. &c. From this hasty sketch of the contents of the tract, our readers will perceive that it is by no means undeserving of notice.

EXTRACTS.

HORTICULTURAL INTELLIGENCE.

ON TRAINING STANDARD FRUIT TREES.—Respect for the opinions of eminent writers on horticulture, who have treated on the mode of training standard fruit trees, corroborated by existing general practice, induce me, like many others, to adopt the fashionable "*bell*" mode; but, observing that those trees in old orchards, most celebrated for bearing heavy crops, uniformly approximate to the pyramidal form, and that the lower branches of such trees were as prolific, healthy, and vigorous, having the fruit as well swelled, and being so highly coloured as to stand a comparison with the more elevated parts of the tree, it was easy to infer that, by giving fruit trees similar forms, similar results might be reasonably expected. I had some fruit trees under my management, upon which for nearly twenty years, no small trouble had been expended to divert them from a natural and upright course, but, after observing the above results, about five years ago, I adopted a more *natural* mode of training. Some of my old trees, I judged to be incorrigible, and these I allow to stand as specimens of the wisdom of the ancients. I know of no pear, apple, plum, or cherry tree, not even the slender twigg'd Morella, that may not be easily made to assume and maintain a pyramidal form. I may here remark that too much nicety in training the centre or leading shoot is ruinous to the system. Let that shoot incline to the right or left, or deviate to every point of the compass, only let it always be the highest part of the tree, and let the lowest branches be always the longest, with their points farthest extended from the main stem. They will thus attract their due proportion of nourishment. Let no superior branch extend quite so far as the one immediately under it. This is easily effected by pruning off a luxuriant leader, and leaving a weak lateral annual shoot to supply its place. Robbery and overshadowing will then soon cease, or be easily corrected. Preserve an easy and regular outline, without approaching to stiffness; keep the branches sufficiently open, and they will be covered with fruit-bearing spurs inward to the main stem. No violent pruning will ever be required, the flow of sap will be regularly distributed, the tree will become lofty, and stand as firmly as its Egyptian prototypes, and the fruit will hang undisturbed by the winds till it drop off fully ripe.—MR. GORRIE.—*Quart. Jour. Ag.—Annals Gardens.*

CULTURE OF POTATOES.—A frequent change of seed is necessary. Any sort may be continued fertile and profitable by removing them from one county to another every fourth or fifth year, or by raising them alternately on very different descriptions of soil. In the cultivation of this useful plant, it appears, from many experiments, that it requires ample space. In field culture, placing the sets of the strong growing kinds in every third furrow, and those of the dwarfier sorts in every second, are eligible distances. There are different opinions held respecting the necessity of earthing-up potatoes. On very thin soils, however, it is absolutely necessary. On deeply ploughed, or trenched ground, earthing up the stems is certainly less necessary; because as the under-ground runners, which produce the tubers, are inclined to extend themselves as deeply in the soil as the roots, they do not seem to require any additional depth of earth immediately over them. But this depends entirely upon the open porousness of the soil, and the manner of growth of some of the kinds. Plucking off the flowers increases the size and number of tubers. It is founded on a law of nature, disposing a plant, constituted to produce at the same time both seeds and tubers, to yield either one or the other more abundantly, according as either is destroyed. If tubers be not allowed to form, many flowers and apples will be the consequence; and if the flowers be destroyed as soon as they appear, the tubers will be increased. It is bad management to plant the refuse, or odds and ends of last year's crop, for the sets of this. If potatoes are planted at all they should be planted well.—*Br. Far. Mag.*

CULTURE OF POTATOES.—No variety should ever be cultivated which uselessly expends itself in the production of seeds, or of full-grown blossoms, unless it possesses some valuable redeeming qualities. The distance of the intervals between the rows should be wholly regulated by the length required by the stems in each peculiar situation and soil. If the utmost length required by the stems be four feet, let the intervals between the rows be four feet also; and if the variety be of dwarfish habits, and its longest stems do not exceed two feet, intervals of two feet will be sufficient. The rows should be made from *North to South* that the mid-day sun may be permitted fully to shine between them, for every particle of living matter found in the tuberous root of the potatoe plant, has been generated into leaves, which act only when exposed to light, and has *descended* beneath the soil. Each set should weigh at least six ounces, and they should never be placed at greater distances from each other than six inches from centre to centre, and a preference should be given to *whole potatoes*, when such can be obtained. If the growth of the plant be very dwarfish, four inches between the set, from centre to centre, will be preferable; and if the form of the potatoe be long or kidney-shaped, a good deal of advantage will be gained by placing them upon their ends, that end which joined the parent plant being placed downwards. The largest produce will generally be obtained from varieties of rather early habits, and rather low stature, there being in very tall plants much time necessarily lost in carrying the nutriment absorbed from the soil, up into the leaves, and down in the state of living sap to the tuber. Varieties which have strong stems and erect form, are to be preferred, because such are least subject to fall upon, and shade the foliage of each other. It is much more advantageous to incorporate the manure with the soil by means of a spade or plough, than to put it in with the sets; for in the latter case, a large majority of the roots, during the summer and autumn, do not derive advantage from it. Early planting is,

under almost all circumstances, best; and the period, except for some very peculiar varieties, should never be later than the middle of the month of April.—*F. A. KNIGHT, Esq.—Br. Far. Mag.*

TO PREVENT CATERPILLARS ATTACKING FRUIT TREES, &c.—Let a hole be bored in the stem of the tree, penetrating as far as the heart, in a direction sloping downwards, about a foot from the surface of the ground. Into this hole, pour a little mercury. Close up the hole with a peg, not very tightly fitted in. Cut the top of the peg smooth with the bark of the tree, and then put a little tar over it to prevent water getting into the hole. This I have found to be a safe and sure method, not only of preventing the attacks of caterpillars, but of driving them off the tree; and it is not yet, I believe, publicly known.—*W. BROWN.—Jour. Agricul.*

FLORICULTURAL INTELLIGENCE.

NEW AND RARE PLANTS, Figured in the Botanical Periodicals for August.

CLASS I.—DICOTYLEDONOUS PLANTS OR EXOGENES.

LEGUMINOSÆ.—The Pea Tribe.

CHORIZEMA SPARTIODES, a native of New Holland, raised by Messrs. Loddige from seeds, in 1832. The plants grow between two and three inches high. The flowers are large, and of a splendid orange and crimson colour. It has been kept in the green-house, potted in sandy-peat earth. It will probably, like others of the same genus, strike by cuttings.—*Bot. Cab.*

OROBUS AUREUS, the Golden-flowered Bitter Vetch, a native of the northern parts of Europe. It is perennial, and of course quite hardy; it produces its orange coloured flowers in abundance, in May. The stems are not more than a foot high. The root may sometimes be separated for increase, although seeds are much more preferable, and we have no doubt they will occasionally be ripened in this country. It will grow in any good garden soil.—*Bot. Cab.*

PLATYLOBIUM OBTUSANGULUM.—Obtuse-leaved Flat Pea. Seeds of this beautiful plant were sent from Van Dieman's Land by Dr. Scott, to the Glasgow Botanic Garden. The flowers are large, and of a rich orange colour. The plant has hitherto been treated as a hardy inmate of the green-house.—*Bot. Mag.* It should be potted in sandy peat, and may be propagated by seeds.

PLATYLOBIUM MURRAYANUM.—Mr. Murray's *Platylobium*, a handsome bush, growing about one foot high, bearing a great number of bright orange flowers, which expand during the day and close as the evening approaches. It is a native of Van Dieman's Land, and requires the same treatment as the last.—*Bot. Mag.*

SOLANÆÆ.—The Nightshade Tribe.

SOLANUM CRISPUM, Curled Nightshade, a native of Chili, very lately introduced. It has been known for many years from the figure in the *Flora Peruviana*. Its flowers are light purple, and expand during May and June. It is supposed to be hardy enough to bear our winters. It grows fast in almost any soil, and will increase by cuttings without difficulty.—*Bot. Cab.*

SALPIGLOSSIS LINEARIS, Linear-leaved *Salpiglossis*. The habit of this plant is wholly that of *Nierembergia*; the flower both in shape and structure is exactly

like the *Salpiglossis integrifolia* of Hooker, *Nierembergia phænicea* of Don. It is exceedingly pretty, and very well deserving of cultivation. The flowers are rich purple. It is a native of Buenos Ayres, whence it was sent by Mr. Tweedie, last year. It is perennial, it strikes very readily by cuttings, and will probably thrive well in a dry, light green-house, (*Bot. Mag.*) planted in light soil.

PASSIFLO'REÆ.—Passion-flower Tribe.

PASSIFLO'RA PHENI'CEA, Crimson Passion-flower, a splendid acquisition, nearly allied to *palata* and *quadrangularis*, from which it differs in having only two glands at the upper end of the leaf-stalk, in the form of the leaves of the involucre. It is much more brilliantly coloured than either of those well-known species. The flowers in the inside are of a rich deep scarlet, on the outside deep violet, with a white streak along the middle.—*Bot. Reg.* It requires the stove, thrives well in rich, open mould, and may be propagated by cuttings.

PORTUL'ACEÆ.—The Purslane Tribe.

CALANDRI'NIA AREN'AVIA, Sand Calandrinia, an obscure annual weed, with crimson-purple flowers, very common in sandy places near Valparaiso, whence seeds were brought by Mr. H. Cuming. It is hardy, and is readily increased by little shining black seeds, which are produced in great abundance.—*Bot. Reg.*

CA'CTEÆ.—The Indian Fig Tribe.

OPUN'TIA AURANTI'ACA, Orange-coloured Indian Fig, a native of Chili, whence it was originally sent to this country by Mr. Nugent. It was also brought home by Dr. Gillies, whose unpublished *Cactus aurantiacus* it appears to be. The flowers are of a clear bright yellow colour, about an inch and a half wide when expanded, with a column of white stamens in their centre. This requires the ordinary management of the dry stove. It is a very free grower, it is less impatient of cold than many of the order, and is readily multiplied by its jointed branches. It is well known that the spines of the Cacti are difficult to extract, when they have entered the skin. If the spines be magnified, it will be found that this is owing to their being closely covered from the point downwards with numerous barbs, which have their cutting bases directed towards the base of the spine. In appearance they are very like arrow-heads, with several rows of barbs, such as are used by certain Indian nations. An interesting fact relating to the common European *Opuntia* is mentioned by M. De Candolle. "Among the practical consequences," he observes, "that result from the facility with which Cacti strike from cuttings, there is one which deserves to be noticed, on account of its importance, viz.: the manner in which the *Opuntia* is employed to fertilize the old lavas at the foot of mount Etna. As soon as a fissure is perceived, a branch or joint of an *Opuntia* is stuck in, and the latter pushes out roots, which are nourished by the rain that collects round them, or by whatever dust or organic remains may have collected into a little soil. These roots, once developed, insinuate themselves into the most minute crevices, expand, and finally break up the lava into mere fragments. *Opuntias* treated in this manner produce a great deal of fruit, which is sold as a refreshing food throughout all the towns of Sicily."—*Bot. Reg.*

ROS'ACEÆ.—The Rose Tribe.

RUBUS RO'RIDUS, Dewy Bramble. This rare species is a native of Madagascar, and strikingly different from all the known species of simple leaved brambles, in its finely cut stipules and bractea, which are covered over with numerous little transparent green glands, giving all the parts that surround the petals an ap-

pearance of being sprinkled with green dew. Its flowers are white, and by no means showy. We presume it requires the green-house, and may be easily multiplied by layers.—*Bot. Reg.*

MALVACEÆ.—The Mallow Tribe:

MA'LVIA UMBELL'ATA, Umbel-flowered Mallow. This curious species is an inhabitant of Mexico, and although cultivated many years ago in the Royal Gardens at Madrid, it never found its way to our collections until introduced from its native country by Mr. Lambert, in 1826. It has hitherto been treated as a hot-house plant, for it is apt to suffer from the damp of a green-house in winter, otherwise it appears to endure a considerable degree of cold. It is rather a coarse-looking plant, but its many elegant scarlet blossoms compensate for its less graceful habit.—*Bot. Reg.*

SCROPHULARINÆ.—The Figwort Tribe.

CALCEOL'ARIA CRENATIFLORA, Crenate-flowered Slipperwort. There is no species of this beautiful genus which forms so striking an object in the green-house as this. How far it will bear cultivation in the open air has not been ascertained. The flowers are a very bright yellow, sprinkled with orange-brown spots.

CARYOPHYLLÆ.—The Chickweed Tribe.

AGROSTE'MMA PYREN'AICA, Pyrenean Rose-Campion, a small and pretty perennial, extremely local in its native country, being limited to one spot on the western Pyrenees. It is hardy, has flowers of a very pale purple, is increased by seeds or by slips, and is admirably suited for rock work. The better mode in winter is to keep the plants in pots, under the protection of a pit or frame. They should be planted in a mixture of sandy loam and peat, and in small-sized pots, as they are apt to suffer from damp.—*Swe. Fl. Gard.*

TROPEOLEÆ.—The Nasturtium Tribe.

TROPEOLUM MAJUS ATROSANGUINEUM, Dark-red Indian Cress, an annual, with very dark-red flowers, and of a rich velvet hue. Perhaps of all plants cultivated for a long series of years, the common Nasturtium is the most striking example that can be adduced of the power possessed, by certain species, of resisting the influences of soil and climate, and of preserving their characters unchanged, even to the colour of their flowers, the present is almost the only variation. Its large dark blossoms of a velvet hue, render it a most desirable acquisition to the flower garden. It is usually more dwarf than the common kind, and like that species will thrive in almost any soil.—*Sweet's Fl. Gard.*

GENERAL MANAGEMENT OF PLANTS UNDER GLASS.—*Continued from Page 374.*—*Frame Plants* require exactly the same treatment as green-house plants, except that in winter they require no fire, but are protected from the frost by mats.—*Stove Plants* are such as are natives within the tropics, and therefore at certain seasons of the year require a great degree of heat and plenty of moisture. The house in which they are grown should be very closely glazed, so as to keep the temperature regular during winter, or cold windy nights. The temperature should never be allowed to fall below 60 degs. Fahr. in winter; in fine days, when it rises to 70 degs. a little air may be given; but the house should be closed early in the afternoon. Formerly the pots of stove plants were plunged in tan, but this method is now entirely exploded, and a bed of gravel or sand is substituted, which is much more conducive to the health of the plants, and greatly diminishes the expense. The houses may be heated with hot water, or with

steam conveyed through pipes, or by means of fires; but the first two methods are preferable, the heat being more congenial. Stove plants are apt to be infested with insects, such as the green fly, red spider, and the mealy bug. The first may be destroyed by the smoke of tobacco, and the second by sulphur-vivum, mixed in a pail of quick lime, with which the flues should be washed all over, this being a sure method of exterminating them. The mealy bug and scaly bug can only be got rid of by removing them with a small hair brush, and for this purpose the plants should be examined as often as possible. The plants should be washed from an engine in fine weather, the house being kept warm, and thus they will always be clean and healthy. Air should be admitted as early in the morning as possible, in warm weather, taking care to shut up early in the afternoon, that the house may be kept at a proper temperature during the night. The time for repotting them is early in the spring, and the pots should always be drained with sherds, to keep the mould loose and free from being soddened with water. The time at which cuttings should be planted is the same as that for green-house plants, when the wood is fit, but these require heat. Seeds of stove plants should be sown immediately on their arrival from abroad, although the general time of sowing be early in the spring. A gentle hot-bed is the best for raising tropical seeds, but some few will come up better on a shelf or flue in the hothouse; and the sooner seedlings are potted off separately the better.—*Succulent Plants*, so called, are such as have a fleshy nature. They are called *dry green-house* or *dry stove* plants, and require to be grown in the same temperature as green-house and stove plants, being natives of the same latitudes. In some gardens houses are specially appropriated to these plants, where they are placed on stages or shelves, and kept rather dry throughout the winter. In gardens where there are no houses thus appropriated, they should be kept on shelves erected for this purpose in a stove or green-house.—GEO. DON.

RURAL AFFAIRS.

ORCHARDS AROUND FARM HOUSES.—It is expedient that every farm should have some portion of orchard ground attached to it. The most convenient and guarded situation for it is immediately behind the house, so that the back kitchen door may open into it. It matters not whether it be on the north or any other side of the buildings. Many think that an orchard should be in a low sheltered spot, but this is a serious mistake. Fruit trees succeed best on a moderately high and open situation. Shelter from wind is certainly necessary, but this protection must be obtained otherwise than by planting in a dell. A deep mellow loam is most suitable for an orchard. It does not require to be richly manured, provided it is fresh, unexhausted, and sufficiently dry. Whether the sub-soil be gravel or stone, provided such beds lie not too near the surface, it will be no detriment to the trees; but if of a tenacious clay which is retentive of moisture, then draining must be resorted to, in order to free the soil from superfluous moisture. This must be done effectually, otherwise it will ever be a subject of regret to the planter. A sloping surface is better for all plants than a dead level, not because a heavy or long continued rain or melted snow runs off the sooner, but because that portion of it which sinks into the ground gradually passes downwards in an under current, leaving no portion to stagnate in any one place, and

to become prejudicial to the roots. The most profitable kind of orchard is that which contains all kinds of hardy fruit trees and bushes, and where the land is solely appropriated to that purpose. This kind resembles gardening more than farming, and is therefore unsuitable to large farms, but quite applicable to small ones, to which an acre of orchard, requiring no horse-labour, would be of essential benefit. In such orchards, half-standard apple trees are planted in rows eighteen feet from each other, the trees being twelve feet apart. In the same line with the apple trees are planted either gooseberry or currant bushes, or what sometimes pay equally well, filberts. The latter are not allowed to rise higher than about four feet, and are kept spurred in, exactly like the white currant. Gooseberries gathered green for tarts pay the farmer better than when ripe, and are not nearly so troublesome in the carriage to market. As such an orchard is not to be grazed, two feet of the soil on each side of the rows of trees is kept bare, and always free from weeds. On this a mulching of rotten dung may be laid every winter, and raked off in the spring, upon the intermediate strips of ground to be planted with potatoes, or sown with onions, turnips, scarlet runners, or any other crop which the cultivator can most advantageously dispose of in his neighbourhood. The earliest and surest bearing apples should be preferred. The greatest majority should consist of the hawthornder, the rest of the French crab and scarlet Nonpareil. A few of the earliest pears may be mixed, as the Petit Muscat. The most hardy and profitable kind of plum for a farm orchard is the common Damson, it being always in request for baking, preserving, or for wine making.—MR. MAIN.—*Jour. Agricul.*

BONE DUST AS MANURE FOR TURNIPS.—Although the quantity of bone dust usually applied to an acre is two quarters, yet one quarter will suffice if mixed with one or two quarters of riddled coal ashes. The bones should be carefully and equally mixed throughout the mass, which will be best effected by frequent turnings with the shovel. To expedite the drying of the ashes, strew a little hot lime, while turning the mass. The compost is sown with the usual machine. Turnips raised with this compost of bone dust and ashes, in the quantity alluded to, have been sold for £7 per acre, to be eaten off with sheep. They possess the same characters of a close crop, firm root, and hardness to resist the rigour of winter, as turnips raised with bone dust alone evince. Perhaps peat, or vegetable ashes of any kind, would be equally as beneficial to mix with bone dust as those of coal.—*Jour. of Agricul.*

NATURAL HISTORY.

EXCRETORY POWERS OF PLANTS.—It has been lately discovered by a vegetable physiologist on the continent, that plants actually exude excrementitious matter from their roots. Plants put to grow in water impregnated with a certain chemical quality, absorbed a certain portion of it, and on being removed into another vessel of pure rain water, discharged into the latter liquid the quality absorbed from the first. In order that no portion of the impregnated water might be carried upon its exterior, the plant was carefully washed in distilled water, previous to its immersion in the rain water. This experiment showed to a certainty, that the plant had taken into its vessels a chemical body in solution,

which it afterwards emitted. On the strength of this proof of the power of plants to give out what they before had taken up, a new theory has been founded, importing that in this respect they resemble animals, taking in food by one set of organs, and after appropriating to themselves by assimilation such parts of it as may be suitable for their sustenance, disgorge the refuse by the same or some other organs, into the earth. The necessity of a rotation of crops, is accounted for on this hypothesis—the plants discharging their fæces into the earth contaminate and render it unfit for the support of plants of the same kind following on the same spot.

APPEARANCES AND INFLUENCES OF THE MOON.—It is generally believed, especially in the neighbourhood of Paris, that the moon in certain months has a great influence on the phenomena of vegetation. They give the name of "red moon" (*lune rousse*) to the moon, which, beginning in April, becomes full either about the end of that month or in the course of May. It is maintained that during these two months, when the sky is clear, the leaves and buds exposed to this light become red, that is to say, frozen, although the thermometer in the free atmosphere, should stand several degrees above the freezing point; and that if the rays of the moon be intercepted by clouds, and prevented from reaching the plants, the same effects do not take place, under circumstances perfectly similar in other respects with regard to temperature. No one had supposed, before Dr. Wells, that terrestrial substances, excepting in the case of very rapid evaporation, may acquire, during the night, a different temperature from that of the surrounding air. This important fact is now well ascertained. We cannot, therefore, judge of the degree of cold with which a plant is affected during the night by the indications of a thermometer suspended in a free atmosphere. The plant may be strongly frozen, although the air remains constantly several degrees above the freezing point. In the nights of April and May, the temperature of the atmosphere is frequently only four, five, or six centigrade degrees above Zero. When this happens, plants exposed to the light of the moon, that is, to a clear sky, may be frozen, notwithstanding the indications of the thermometer. If the moon on the contrary does not shine, in short, if the sky be cloudy, the temperature of the plants does not fall below that of the atmosphere, and they will consequently not be frozen, unless the thermometer indicates Zero. It is, therefore, quite true that a plant may be frozen or not, according as the moon be visible or concealed behind clouds. The moon's light is, in this case, only the index of a clear atmosphere, and it is in consequence of the clearness of the sky that the nocturnal congelation of plants takes place; the moon contributes to the effect in no way whatever, for although she might be hid under the horizon, the effect would not be different.—M. ARAGO.—*Field's Nat. May.*

MICROSETIA RUFICAPITELLA.—In the autumn, the leaves of the rose-tree, on their upper surfaces, are very often marked in various directions with broad brown lines, having a narrow black one running down the middle. This curious appearance is caused by the small caterpillar of a minute moth (*Microsetia*) which feeds inside the leaf when full grown, the caterpillar is nearly two lines long, of a yellow-orange colour with a brown mark down the back, the head very flat, and sharp, and light chocolate. The brown mark on the leaf is caused by the drying of the epidermis, from the insect having eaten the parenchyma, or substance of the leaf beneath. The black one is caused by its egesta, which, during its young state entirely stop up the mine. When full grown, which is

about the 24th of October, it eats out of the leaf, and crawls down the branches and stem, until it has found a convenient place to fix its cocoon. This is the only time when it finds it necessary to make use of its legs, which seldom exceeds an hour, sometimes less. After having found a suitable place, which is generally about the spines and offsets of the branches, it begins to form its cocoon, by stretching out its body and attaching a thread to the branch. It then turns its body to the other side, fastens it there, and by proceeding in this manner on all sides, keeping the hinder part of the body fixed, it forms the upper part of the cocoon, or that exposed to the weather, which is convex, and generally circular. The under part is oblong, shaped to hold the pupa; it is much smaller than the upper, which projects considerably beyond it on all sides. At one end the threads are not interwoven, and leave a space through which the pupa can force a passage. This remarkable cocoon is very flat, and at first of a pure white, which is changed by the first shower of rain to a light orange. It afterwards assumes a deep brown colour, so nearly resembling the bark of the rose-tree as only to be distinguished by a practised eye. This change takes place very rapidly. The pupa is light brown, of an oval shape, about a line long, and half that in breadth. The perfect insect is produced in May; it is the sort called the Red-headed Pigmy; the upper wings are gold-coloured (*Ent. Mag.*) with the hinder margin purplish, the head being reddish, and the expansion of the wings $2\frac{1}{2}$ lines.

PART III.

MISCELLANEOUS INTELLIGENCE.

I.—QUERIES AND ANSWERS.

WILL SOME OF YOUR READERS GIVE ME FURTHER INFORMATION ON THE CULTURE OF THE AURICULA?—Being desirous of having a good bloom of Auriculas this spring, I was induced to try Mr. Revell's plan of growing them, as detailed in Vol. I, page 56, which has answered exceedingly well for some sorts, but not for others. The green-edged varieties grew and bloomed very fine, but the grey sorts succeeded very badly. Will Mr. Revell, or any other of your correspondents, have the goodness to inform me whether the grey varieties require different treatment from the green ones? A LOVER OF AURICULAS.

IS THERE NOT AN ERROR IN THE WOOD-CUT ON PAGE 259?—Your Wood-Cut, page 259, at (c) represents the shield with an oval top, instead of being cut across, that the bark of the bud may join the bark of the stock, on which, I believe, entirely depends the success of the operation. C. C. C. C.

London, June 3rd. 1833.

ANSWER.—That which at (c) appears like an oval top to the shield is intended for the bud itself, which the upper figure (a) will explain.

HOW TO UNDERSTAND THE FORCE-PUMP.—I should have understood the pump, page 274, much better, if it had been described by letters, a, b, &c. At present it seems to me to be a contrivance for letting water fall, in order to have the pleasure of raising it up again.

I SHOULD BE OBLIGED BY A FIGURE OF A GOOSEBERRY AND CURRANT BUSH well pruned: The Currant-Bush is very characteristically exhibited in Cobbett's "English Gardener." You should shew us the bush in its unpruned state, and then the same bush pruned, illustrating what has been done by references. I believe the same plan might be adopted for illustrating the method of pruning all sorts of fruit trees. There is nothing so difficult to describe verbally, and yet a drawing renders all plain and easy.

HOW SHALL I PRESERVE SPECIMENS OF PLANTS!—I should be much obliged, if some of your correspondents would inform me of the best, easiest, and cheapest method of preserving dried specimens of plants, for I wish to form a Herbarium.

HOW SHALL I PRESERVE MOTHS AND BUTTERFLIES, &c.?—What is the best method of preserving butterflies, moths, and other insects, so as they will retain their beautiful tints of colour? I should also like to know if there be any way to preserve the eggs of birds, so as to prevent the spots on the shells from disappearing. I have tried several times, but they have always lost their colours. I wish to keep one of each sort for a reference at any time.

J. K.

ERROR IN THE ARTICLE ON RHUBARB, PAGE 153.—I am sorry to be again so soon obliged to trespass upon your attention with the notice of an error in your *Register*, for April last, page 153. In the quotation from Gerard's Herbal respecting rhubarb, you will find, on a reference to that excellent and extraordinary book, that his anecdote relates to the *Hippolapathum satirum*, Monk's Rhubarb, or Herb Patience. See page 392 of Johnson's Gerard. I observe in Donn's Catal. that Garden Patience, *Rumex patientia*, and Monk's Rhubarb, *R. alpinus*, are stated as different species, and both of *foreign* origin. Father Gerard takes no notice of this circumstance, but Parkinson mentions it in his Herbal, at page 157. An old clergyman, a brother-in-law of mine, who had been occasionally engaged in controversial divinity, advised me always to examine quotations from books, for said he you will often find them incorrect or inapplicable.

Erdington, near Birmingham, May 23rd, 1833.

T. B. BUXTON.

P. S. I am much obliged to you for the Rhubarb seeds, some of which are now growing in my garden, and I beg your acceptance of three small papers of East India seeds, which were gathered last year. The Cuddalore shrub is commended as very fragrant, but the person who gave the seeds to me is no botanist, and I therefore know nothing about the plant. The Lettuces, he says, are small but very good, and the Shaddock very fine.

ANSWER TO MR. BROWN ON SEYMOUR'S SYSTEM OF TRAINING.—The remarks made in answer to Mr. Cameron will probably be sufficiently conclusive for Mr. Brown, who unfortunately quotes the observations of Mr. J. Harrison to prove the imperfection of Seymour's system of training. Although Mr. H. formerly condemned it, he is now not only become a convert to the practise, but a strenuous advocate in its favour. If Mr. Brown saw them trained to the perfection of which they are capable on Seymour's plan, I am not sure that he would not be of the same opinion. All that I have hitherto advanced, I intend to maintain.

HENRY DYSON.

HOW SHALL I DESTROY EARWIGS!—I had a great quantity of Dahlias planted out in the borders, and these depredators began to strip them, they have already done this so effectually in some cases that not a single leaf remains. They totally disappear in the day-time, and begin their mischief at night. I

have tried all the means I know to destroy them, but cannot. Four men, three boys, and myself went out for several nights and destroyed thousands, yet they still appear as numerous as ever. W. G.

HOW SHALL I GET RID OF WOODLICE?—I have been trying to grow cucumbers and melons the whole of this season, but to no purpose. As soon as the plants come into blow, the flowers are immediately devoured. I have tried every thing I can think of, but they still increase. I have killed hundreds. W. G.

WHAT IS THE CULTURE OF THE MUSA?—Pray will some one of your correspondents furnish me, through the medium of the *Register*, with a description of the Culture of *Musa sapientum* and *paradisaca*? T. K. S.

HOW ARE HOLLIES CULTIVATED FROM SEEDS?—Will you at your leisure treat on the subject of cultivating hollies from seed, in the formation of common hedges, and the best method of growing a fence upon gravelly soils, or partially so, the best time of planting, how long it is necessary for the seed to be buried, &c. &c.? A CONSTANT READER.

WHERE CAN I PURCHASE KNIGHT'S SWEET RED CURRANT?—In Vol. I, p. 824, mention is made of a Sweet Red Currant introduced by Mr. Knight. I have sought for it, but can find no nurseryman who has ever heard of it. Will you be kind enough to state where it can be procured? I have experienced the like inconvenience in finding some of the apples mentioned in your list, and as to the pears, I am involved in the greatest confusion, many of them passing by half a dozen names. Could not some arrangement be made by gardeners on this head, so that purchasers might not be so inconvenienced? A CONSTANT READER.

II. NATURALIST'S CALENDAR,

OR OBSERVATIONS ON NATURE, FOR SEPTEMBER.

AMONG other interesting plants, corn-fields and gardens afford abundance of the Scarlet Pimpernel, *Anagallis arvensis*, (fig. 54, 1.) The name of this plant is derived from *anagelao*, to laugh, on account of its supposed medical properties, for which it was formerly much celebrated. It is called the Poor Man's Weather Glass, because, every morning, if the weather be fair and warm, the blossoms generally expand about seven o'clock, seldom much before, except in peculiar situations, and close again soon after two in the afternoon. If the atmosphere contains much moisture, or there is a probability of rain, the flowers seldom fully expand, sometimes not at all, and when they do open they soon close again, to preserve the delicate parts of fructification from the injury of the weather. In ditches, and marshy ground, the Water Pimpernel, or Brook Weed, *Samolus valevandi*, (fig. 3) is found growing; its flowers are white and insignificant, and the whole plant, when in flower, stands about nine inches. In the same situations, but more commonly than the last, may be found the Water Purslane, *Peplis portula* (fig. 4); it grows but about three inches high, and bears purple flowers. In most bogs, the Bristle-like Club-rush, *Isolepis setacea*, (fig. 5) grows plentifully; it usually attains the height of about three inches, intermixed with

various species of Club rushes, (*Scirpus*) from which however it may easily be distinguished. Many of our friends no doubt have observed a little twining plant, with a red stem and white flowers, entirely destitute of leaves, most pertinaciously fastening itself round nettles or other plants in the hedges, from which it draws the nourishment; this is the Greater Dodder, *Cuscuta europea* (fig 2). It proves at times amazingly injurious to the farmer, when found in his cultivated fields. It twines round his beans, completely mats them together, and destroys the whole crop. In France, when the crops of Lucern are liable to be injured by it, the farmers either cut the Lucern early in the season, before the Dodder has fixed itself, or destroy both the Lucern and the Dodder.

DIFFUSION OF SEEDS.—One of the most beautiful contrivances for the diffusion of seeds occurs in various species of violets. The seeds of this order of plants are contained in a capsule of a single loculament, consisting, however, of three valves. To the inner part of each of these valves the seeds are attached, and remain so for some time after the valves, in the process of ripening, have separated and stood open. The influence of the sun's heat, however, causes the sides of each valve to shrink and collapse, and in this state the edges press firmly upon the seed, which from being before apparently irregular in its arrangement, comes into a straight line. The seeds, it may be remarked, are not only extremely smooth, polished, and shining, but regularly egg-shaped; so that when pressed upon the collapsing edge of the valve, it slides gradually down the sloping parts of the seed, and throws it with a jerk to a considerable distance. There is in the *Violaceæ* another part in the contrivance of Providence for the same purpose, worthy of remark. Before the seed is ripe, the capsule hangs in a drooping position, with the persisting calyx spread over it like an umbrella, to guard it from the rain and dews, which would retard the process of ripening; but no sooner is the ripening completed, than the capsule assumes an upright position, having the calyx for a support. This position appears to be intended by nature to give more effect to the valvula mechanism for scattering the seeds, as it thus gains a higher elevation from which to project them; and this according to the laws of projectiles, gives it a very considerable increase of horizontal extent.—*Mag. Gard. Bot.*

BIRDS.—A few days back, a Dorking cock and his numerous wives being assembled round a tub, sunk in the ground for ducks to bathe in, a piece of bread was flung in the middle of the water's surface to see what they would do to obtain it. At first they strutted round and round the tub, trying at different sides to reach it, but after many attempts, finding their endeavours unsuccessful, all retired from the spot except the cock and one of the hens. The latter, after eying the desired morsel for some time, and apparently considering how to get it, at length hit upon this ingenious expedient. She placed her beak down to the brink, sucked up the water, and thus formed a current on which the piece of bread floated towards her, though very slowly. The cock perceiving this ran round to the opposite side, began to fan his wings, and ceased not until he had blown the bread within the reach of the hen.—*Field's Nat. Mag.*

TREE AND MEADOW PIPITS.—In the writings of the earlier British naturalists, much confusion prevails respecting these two birds; it having been generally supposed that there are three species, described under names of the tree lark, the tit-lark and the pipit-lark. The true origin of this confusion has never yet been pointed out, although it has long been shown that one of these birds was multi-

plied into two species. Our later writers supposed the provincial name "pipit" or "pipit-lark," to signify the meadow-pipit, (*Anthus pratensis*) in its winter plumage, and the term "tit-lark" they referred to the same species in its summer garb. This application, however, of the two provincial names is incorrect; the "tit-lark" of bird-fanciers and bird-catchers being the tree-lark or tree-pipit (*A arboreus*) of naturalists, while the meadow-pipit (*A pratensis*) of naturalists is, at all seasons, and in every state of plumage, provincially known by the name of "pipit," or pipit-lark.—*Field's Nat. Mag.*

SQUIRRELS.—A very marked variety, if not a distinct species of squirrel exists in England, which does not appear to be noticed by any author. It is generally when full grown, rather larger and stronger built than the common squirrel, the fur is much coarser, and of a very red colour, the tail is more bushy and handsome, and the ears are rounder, and not furnished with those long hairs which adorn the ears of the common squirrel.

[We regret to state that the Wood Cut which should have occupied the blank space in this page of the *Register* is, through the negligence of the Engraver, unavoidably omitted. The printing of the present sheet was deferred to the last moments in the hope of obtaining the cut in time, but after all no other alternative remained to us than to pledge ourselves for its appearance in the next number.]

MOLLUSCOUS ANIMALS.—The shell (fig. 6) *Clausilia bidens* is said to be a native of Wales and Scotland; it is half an inch long, pale brown colour, and obliquely striped with a darker colour. Under stones and in old walls, however, another species, the *Clausilia rugosa* (fig. 7) is common enough; it is about the same size as the last, but instead of being pale brown, is usually of a glossy black, sometimes grey, and often marked with light lines. In slow running shallow rivers is the *Neritina fluviatilis*, (fig. 8) it is something less than half of an inch long, and quarter of an inch broad, and is usually found adhering to the stones. The shell is of a greenish or whitish colour, and variously chequered with spots or bands of white, brown, purple or pink. The *Limacellus Unguiculus* (fig 9) is found in the interior of the large grey slug, with a yellowish ridge down the back, called the *Limax carinatus*. This shell is about quarter of an inch long, and little more than half that in breadth. The *Limacellus Parma* (fig. 10) is about double the size of the last, and is found in the *Limax maximus*, or dark grey slug. All the genus *Limacellus* are found within such of the slugs as have a carinated ridge down the back, at least on its lower extremity, and none else. Thus the large grey slug, with stripes of darker spots, is armed with this internal testaceous shield, but the common black or brown slug has none, or the mere unformed rudiments. In the fissures of rocks, amongst the mosses and Lichens which will be found growing on old apple trees,

and in the crevices of the old bark of many other trees, the *Balan fragilis* (11) seeks shelter. The shelter is about a quarter of an inch long, slender and tapering to rather a sharp point, and of a yellowish horn colour. On dry banks, and under stones in hilly places, is the *Helix caperata*; (12) it is nearly half an inch in diameter, and a quarter of an inch high, of a dull yellowish white colour, with brown bands, and rather a handsome shell.

ON THE MAY-FLY.—A very mistaken notion is prevalent in most places with regard to the insect so well known to fishermen by the name of the May-Fly. Most people imagine that the cadis, which is to be found at the bottom and sides of every streamlet, is the May Fly in an imperfect or undeveloped state. Many fly-fishers, as well as other persons, are not aware of the incorrectness of the supposition. The grub from which the May-fly is formed, is to be found under the weeds which grow at the bottom of rivers, buried in a fine green sand, and presenting in every respect an accurate resemblance, both in the head and tail, to the perfect fly, the growth of the wings being indicated by small pointed members like the wing-cases on the back of an earwig. The cadis does not present either in its head or tail any similarity to the body of the May-fly, nor is there the slightest appearance of the growth of the wings. Numbers of cadis are frequently found in places where it is notorious that the *May-fly never rises at all*.*

EGGS OF MOORGAME—I was surprised the other day, on examining the nests of some moorgame, to find so great a difference in the eggs, some of which are much lighter in colour, and also very differently marked than others. Can this be owing to the newness of the eggs? I am inclined to think that the eggs grow browner as they become older, more particularly so from having noticed in the nest of a Golden Plover, which contained four eggs, that every egg was of a different shade. Perhaps some of your zoological correspondents can give a little information on this point. It perhaps may not be generally known that a Red Grouse generally lays eight eggs. One person to whom I spoke said he had seen many nests, and nearly all of them contained eight eggs. What number the Black Grouse lays, I cannot tell, Montagu says from eight to fourteen eggs. Notwithstanding the lateness of the season, the Swallows and Cuckoos arrived at nearly the same time as last year, the Swallow in particular, I saw within a day of the time I noticed it last year, viz.: the 20th of April.—*MANCUNIENSIS*.

MASON WASPS.—During this month several species of the solitary wasps and bees excavate holes in which to deposit their eggs. The mouth of these holes they afterwards close up, to preserve their offspring secure from the attacks of enemies until the following spring, when they open the holes and come out in the perfect winged state. This business is not, however, confined to September, but in July and August these processes are carried on, as may be seen by an attentive observer. In July last, a species of the mason wasp, *Odynerus*, was observed by us to have excavated a hole in the hard mortar of some stones which were thrown together in Chatsworth gardens. The hole was so small as scarcely to allow her to turn in it. She must have been at amazing pains to give it a smooth finish. It is usually thought these wasps deposit two eggs. We did not perceive any in the present instance, but there were five green caterpillars alive,

which were evidently intended for the food of the young when hatched. Unfortunately the nest was destroyed before we had an opportunity of minutely examining it as we could have wished. We endeavoured to capture the parent, but without success, yet from its appearance we conclude it to be the *Odynerus bifasciatus*, which we apprehend is a very rare species.

METEOROLOGY.—The remarkably severe frost on the 4th of August, was another proof of the fact, that plants may be strongly frozen, although the air remains constantly several degrees above the freezing point. The kidney beans, and various other productions, were materially injured at Chatsworth, and other places around, whilst the thermometer, hanging against a north wall, stood at nearly 40 degrees Fahr. Probably the heat retained by the bricks might considerably affect the mercury, but we have found that the white frosts prevalent in spring and early in the autumn seldom sink the mercury very low in the tube, since it often stands above the freezing point, while at the same time vegetation has met with a complete stagnation.

The amount of Sunshine during the month of July is as follows:—

July	Morning	Evening	Total	Average Daily
	102 hours.	91 hours.	193 hours	6 hours 13 min. 33 sec.

III.—MONTHLY HORTICULTURAL CALENDAR.

FOR SEPTEMBER.

FRUIT DEPARTMENT.

Apple Trees.—Since the various species of caterpillars mentioned last month now go into the pupa state; our readers should follow the directions then given, any time before the middle of the month.

Buds put in during last month and July will require their bandages loosening.

Cherry Trees.—If they are infested with insects, follow the directions given last month. The *Morellas* will require netting, to preserve the fruit from birds. Those in pots for forcing, if the wood be ripe, should be placed under a north wall.

Figs on the open walls being now ripe, refrain from watering till the fruit is gathered; those in pots must still be supplied with water.

Gooseberry Trees infested with caterpillars, now the fruit is gathered, should be treated as recommended last month.

Peach and Nectarine Trees.—The fruit being now ripe, although infested with the red spider or other insects, all operations must be suspended, until after the fruit is gathered. They may then be treated as recommended page 356. Treat those in pots in the same manner as recommended for cherries.

Pear Trees; if infested with the almy larva, dust, on a dry day, with quick lime, and, in a few days afterwards, wash the trees clean by means of a liquid. This must be done before the fruit begins to ripen.

Plum Trees, if infested with the *Aphis*, as soon as the fruit is gathered, use the mixture recommended, page 335. The best time to apply it is the first thing in the morning, and late in the evening, for, if the sun shines bright, the leaves may suffer injury.

Raspberries, if troubled with the *Aphides*, wash with some soap suds and tobacco-water, in the proportions of one gallon of the latter to four of the former.

Strawberries in Pots, keep free from runners; and plant new beds on good strong loam.

Vines in Pots being now brought into the vinery, will ripen their fruit at the end of January.

FLOWER DEPARTMENT.

Azaleas cuttings put in, in July, will now probably require potting off.

Camellias, if wanted to flower early, should be taken into the greenhouse in the beginning of the month, whilst the others may remain out of doors until the beginning of October. Grafting and budding too, are often performed upon them at this time, but we prefer the spring season.

Carnations, layed last month, will require potting off.

Calceolarias, cut down in July, will begin to flower about the end of the month. Place them in an airy part of the greenhouse.

China Rose cuttings strike very freely now, if planted under a hand-glass, on a south-east or south-west aspect, and are potted off in the spring; but they become fine plants in much less time, when planted in spring.

Chimonanthus fragrans may still be increased by layers and cuttings, as recommended last month, page 383.

Cyclamen persicum, if not turned out of the pots into a sheltered border, let this be done as early in this month as possible, page 213.

Greenhouse Plants of several kinds may still be propagated by cuttings.

Mignonette, to stand the winter in pots, if not sown last month, should be sown as early as possible, page 384.

Oranges and Lemons may still be propagated by cuttings, page 165.

Pink pipings, put in last month and July, if properly struck, should be transplanted in beds to remove in the spring. Pot off a quantity of one year old plants to force, page 211.

Ranunculuses, planted in frames towards the end, will flower from Christmas to the middle of January.

Ten Weeks Stocks sown in pots early in the month, and sheltered in frames, will flower early in the spring.

Primula prænites (sinensis Lindl.) cuttings of this plant may be put in about the end of the month, page 164.

Cactuses of all sorts should now taken into the greenhouse, as recommended, page 161.

Isoloma axillaris.—The seeds of this plant may be sown to flower in the following May, page 112.

Schizanthus may also be sown, and treated as recommended, page 112.

VEGETABLE DEPARTMENT.

Broccoli sown last month should be transplanted out, to produce heads next April and May.

Carrots sown last month should be properly thinned out, and a little more seed may be sown in the beginning, if enough has not been sown.

Cauliflower Plants will be ready to prick out towards the end of the month, for sheltering in frames; the reader may also pot a score or two in sixty-sized, and plunge them in the same frame.

Cabbage Plants should be planted out early in the month, in rows twelve inches apart, and six inches from plant to plant. Prick out in beds those sown last month.

Celery will require earthing up as it advances in growth.

Endive may be planted out two or three times in the month.

Herbs fit for cutting should be gathered in fine weather.

Lettuces should be planted out for use in October. Sow seed three times during the month, for preserving through the winter.

Mushroom Beds should now be generally made.

Normandy Cress should be sown early in the month.

Welsh Onions, if not sown in August, should be sown as speedily as possible.

THE
HORTICULTURAL REGISTER.

OCTOBER 1ST, 1833.

PART I.

ORIGINAL COMMUNICATIONS.

HORTICULTURE.—ARTICLE I.

ON CHEMISTRY AS CONNECTED WITH THE DEVELOPEMENT
AND GROWTH OF PLANTS.

BY THE AUTHOR OF THE DOMESTIC GARDENERS' MANUAL.

IT has long been my intention to write a series of papers upon the subject of what is usually termed "Horticultural Chemistry." Heretofore, I have not found a favourable opportunity of arranging the multiform facts which presented themselves to my mind, with that methodical precision which the deep interest they possess appeared to require. I hope, however, that I shall, from time to time, be able to follow up the series of Articles now commenced, with a few *preliminary observations*.

The reasons which induce me to enter that field wherein so many pioneers of science have broken ground before, are various. You yourself have urged me to the work, and truly gratified shall I be, not only to promote the interest of your valuable periodical, but to assist the young horticultural student in his endeavours to attain some well-grounded, definite ideas, of the stupendous machinery that is constantly at work in every process connected with his art. I have felt that, up to the present moment, the principles of vegetable development have been viewed through delusive media. Physiologists

and chemists, in their researches, have followed the old beaten track ; they have been almost wholly led by the influence of authority ; they have taken things for granted, upon the bare *ipse dixit* of some great præcursor : in a word, they have failed to investigate or reflect for themselves. The consequences have been, that little or no advance has been made in physiological science ; and those who sought the solution of phænomena, have been content to ascribe the *effects* they witnessed, to causes having no foundation in natural fact. It will be my chief object, as I proceed, to demonstrate, that the foregoing statements are not mere assertions. I respect authority, and would not undervalue it ; the labours of a Lavoisier, a Priestley, a Du Hamel, a Davy, and a multitude of other philosophers, deserve to be held in high estimation, for truly, "their works do follow them ;" but I contend that Science is retarded by that reverential deference, which seems to yield implicit faith to the opinions of great men. The very differences that are constantly found to exist, prove, to a demonstration, that errors must, to an equal extent, abound. Some of these errors I shall endeavour to point out ; and in order to do so, as well as to guard the reader against the prevalence of those mistaken notions heretofore regarded as facts, I shall introduce the subject of these papers by an elucidation of several of the leading *Chemical and Physiological Terms* that must, of necessity, be repeatedly employed ; occasionally giving a plain and simple account of the source or derivation of the terms, in order to familiarize the reader with the origin of the science he studies ; for I am convinced, that nothing tends so effectually to impress the memory, as a clear and precise knowledge of the *meaning* of whatever it undertakes to grapple with.

The adjective word *Chemical* is clearly derived from *Chemistry*, formerly, and perhaps more correctly, spelt *Chymistry* ; because it was derived, either from the Greek word *χυμος* (*Chumos*) which literally means *juice*, and from which the word *Chyme* has been obtained ; or from *χυμα* (*chumia*) which may be explained as the act of melting, or operating by heat upon solids or fluids. Hence, the art of chemistry includes every operation of combination, separation, liquefaction, sublimation or diffusion, by the agency of *heat or fire*. There is, however, some perplexity or confusion in the origin of the word ; and therefore the reader may be referred to the following extract from Johnson's quarto Dictionary : "Chymistry, sub. fem. derived by some from *χυμος*, *juice*, or *χυν* to *melt* ; by others, from an Oriental word, *kema*, black. According to the etymology, it is written with *y* or *e*. *Chemistry*, viewed in the modern acceptation of the term, that is, as the agent of analyzing or combining material

substances, cannot be correctly applied to any body or substance endowed with the *vital principle*. Thus Arbuthnot most justly observes: "Operations of *Chymistry* fall short of *vital* force; no chymist can make milk or blood of grass." I wish the reader, therefore, most distinctly to understand, that whenever the words chemical or chemistry are employed, with reference to living subjects, it is only in conformity with custom; since the idea is wholly disclaimed that any process, at all identical with the operations of man upon dead or effete matter, is ever, in any instance, carried on in the vegetable or animal organized frame, so long as that frame is actuated by, or endowed with, the powers of life. On this head, my ideas will be more particularly explained in an article upon the agency of *light*.

Physiology, physiological, are words derived from the Greek; they are highly appropriate and expressive. *φύσις* (*phusis*) by converting the Greek *υ* or *u* into our *y*, as is usually done, becomes *physis*, nature, and *λογος* (*logos*) is a speech, discourse, or treatise. These two Greek words united, form the English word, *physiology*, which means, literally, a treatise or discourse of, or concerning nature: hence this word, and Natural Philosophy, convey one and the same meaning; viz., the science or study of nature in general. Another word frequently employed, and more strictly applicable to the science of horticulture, is "*phytology*," derived from the two Greek nouns, *φυτον* (*phuton* or *phyton*) a plant, and *λογος* (*logos*) before explained. Vegetable physiology, and phytology, are therefore nearly synonymous, and express the science or study of the nature of plants.

Having thus endeavoured to familiarize these introductory terms, I shall not here intrude upon your readers' time, by an enquiry into the etymology and meaning of every chemical word that may occur, but confine myself at present to three or four, which, on all occasions, are made use of by those who write or speak of the components of vegetable or animal structure. These terms are oxygen, hydrogen, carbon, and we may add, azot or nitrogen.

The word oxygen had its origin in the famous Lavoisier, who flourished just before the period of the first French revolution, and fell a victim to the blind fury of the revolutionary tribunal of Paris, on the 8th of May, 1794. Having been one of the farmers-general, he was condemned on the charge of being a conspirator, and of having adulterated the tobacco with water, and with ingredients obnoxious to the health of the citizens.

Lavoisier thus expresses himself with regard to the origin of the word oxygen: "We have given to the base of the respirable portion

of the atmospheric air, the name of oxygen, from $\alpha\chi\upsilon\varsigma$, *acidum*, and $\gamma\iota\gamma\upsilon\mu\alpha\iota$, *gignor*, because one of the most general properties of this base is to form *acids*, by combining with many different substances."

Of Oxygen as a base but little is known. It is one of those masterful secrets which perhaps may never be revealed to mortal mind, and therefore can never be spoken of with too much modesty. Oxygen has been usually described as a peculiar elementary base, of the nature of which no one, that I am aware of, hazarded a conjecture, till Mr. Hume (a chemist in Long Acre, London) published his pamphlet, in 1808, "Upon the identity of Silex (or pure flint) and oxygen." Oxygen gas has been always defined as an elastic aeriform fluid, consisting of oxygen (the base) in union with a certain portion of caloric, or the matter of heat, a term derived from the Latin word *calor*, heat. Wishing to rest upon no man's foundation, and equally disclaiming the idea of assuming as mine own, that which has been previously advanced by another, I still believe that, till I wrote the section upon "Water," in the "Domestic Gardeners' Manual," no writer had ventured to hazard the conjecture of the aqueous origin of oxygen and of oxygen gas. I assert nothing, and require no one to place faith, or a blind unreflecting confidence in anything I may adduce as an hypothesis; but no man can write sincerely except from the conviction of his own mind. And I doubt the correctness of all that has been said, written, or deduced, from experiment, upon the nature of oxygen gas, and feel convinced that it has had, at all times, its origin solely in the decomposition of water, by the agency of pure electric ethereal lights. I define oxygen as a peculiar base, one of the components of water; and oxygen gas, as an elastic fluid, derived from water, by the union of that peculiar base with a certain definite portion of pure solar fire; which fire is the one sole source of all the natural phænomena of attraction and decomposition. This elementary fire is identical with the caloric of modern chemists, and exists throughout nature, ever present in one or other form or modification, but generally concealed, till excited by some act of percussion, or of chemical attraction.

Hydrogen.—This term also originated with Lavoisier and other celebrated French chemists; it was applied to that peculiar base or radical which, when in combination with oxygen, constitutes water. The word is compounded of $\upsilon\delta\omega\rho$ (*udor*) water, and $\gamma\iota\gamma\upsilon\mu\alpha\iota$, or rather $\gamma\iota\gamma\iota\omega$ (*geino*) I generate; it indicates the generator, or source of water. The term hydrogen, as was the case with oxygen, designates the solid or base; and what this is, is unknown to man,

but hydrogen gas, is an aeriform fluid, the lightest known matter, perhaps, of all things that possess weight. It is usually said to be a compound of the base, and a certain definite proportion of caloric, or the matter of heat. My hypothesis, or the electric hypothesis, describes it as a solid base, electro-chemically united with a definite proportion of solar etherial fire, by which its particles are extended and divided, not, however, interstitially, by an act of propulsion or separation, but by a specific, chemical action, whereby each particle occupies a certain and vastly enlarged space, but still is identical in its nature, a pure chemical compound of the base and of its subtile, all-pervading solvent.

Carbon, derived from the Latin word *carbo*, burnt wood, or charcoal, is that peculiar substance familiarly known as the product of the slow combustion of wood. This explanation is not, however, strictly correct, for charcoal is not pure carbon, since it is found to contain a very large portion of oxygen and other foreign matters, to the extent, perhaps, of nearly one-third. Pure carbon is not to be found in any product of combustion, nor throughout nature unless it be in the diamond. It is said, however, to exist, ready formed, in vegetables; but to obtain it, chemists are obliged to "subject them to the action of fire, at first moderate, and afterwards very strong, to drive off the last portions of water, which adhere very obstinately." The reader is requested to notice this extract from Lavoisier; and to remark that the ready formed charcoal of vegetable substances is only to be detected by the operation of fire. The fact thus laid bare will lead to very important results, as it will be my endeavour to prove hereafter. I now content myself by observing, that the substance generally understood by the term carbon is charcoal, a product of combustion that contains a portion of oxygen; a further dose of which converts the charcoal into an elastic gaseous fluid called carbonic acid. Pure carbon has never yet been decomposed, it is therefore considered a simple elementary substance, and unless the diamond be its type, it has not as yet been discovered in a free, uncombined state.

Azot or *Nitrogen* is one of the constituents of atmospheric air, and also of the nitric and nitrous acid. The former term is derived from the Greek privative letter or particle, α , implying a destruction or deprivation of, and $\zeta\omega\eta$ (*Zoe*) life, and the latter from $\nu\iota\tau\rho\omega\nu$ (*nitron* whence *nitrum* Latin) nitre, or nitrate of potasse, saltpetre; and $\gamma\epsilon\gamma\epsilon\mu\mu\epsilon\iota$ I generate, before described. Nitrogen, or nitrogen, expresses a product from nitre, or rather nitric acid; because this peculiar gas may be procured by the decomposition of that acid. It is a curious

and interesting fact, that the bland atmospheric air which we breathe, and the corrosive acid, known familiarly as aqua-fortis, contain chemically, the same constituents, namely, azot or nitrogen, and oxygen. In the air, the proportions of azotic gas and of oxygen gas are about 79 parts of the former, and 21 parts of the latter, both by measure. In nitric acid they are calculated to exist in the proportion of 26 parts by weight of nitrogen, to 74 parts of oxygen.

I shall reserve what I have to remark upon the qualities of the various substances or products above described, and the agencies in which they are employed; because I conceive that elementary instruction is more effectually conveyed by the exemplification of facts, than by copious, dry detail.

ARTICLE II.

ON THE CULTURE OF SEA-CALE (CRAMBE MARATIMA).

BY MR. MOSES BRISTOW,

Gardener to C. G. Munday, Esq. Burton, Leicestershire.

THIS plant, although a native of this country, and found growing in the sand on most of our southern shores, has not, so far as can be traced, been in use as a dinner vegetable more than a century. The first account of its being sold in the market is in 1753. About 1767, Dr. Lettsom cultivated it at Grove Hill, and brought it into general notice in the neighbourhood of London. The Romans do not appear to have attempted its culture in their gardens, though they made use of it on occasions of long voyages at sea, storing it in old oil barrels, which were kept air-tight. In Ireland, this plant was cultivated in the gardens, in the neighbourhood of Dublin, about 1764. When the seeds were sown, they covered them with a good thickness of gravel; and it was then the practice to boil it in two separate waters, it being supposed to be impregnated with a considerable portion of salt. There are now but few gardens of importance, either in this country or Ireland, where Sea Cale is not grown. It is a plant of very easy culture, and is always eaten in a blanched state. Many different methods have been practised, most of which, in a greater or less degree, have answered. Where there is no intention of forcing it early, many persons cover the stools pretty deep with sand or coal ashes, placing a stick against each root, as a guide to cut the young shoots, previous to their appearance above the surface. Others mix an equal portion of well decayed manure with the coal ashes, and in

the absence of that material, road sand, which contains a good portion of carbonate of lime, and they sprinkle a little salt, perhaps about half or three quarters of a pound to each square yard. Some place pots or boxes over the crowns, on the top of this covering of ashes, &c. Others place them without the use of any covering of ashes, &c. merely laying a portion of sand upon the crown within the pot, to keep the blanched shoots clean. When it is required to be gradually forced, the crowns are covered with large pots, either made for the purpose, or common garden pots inverted, the draining hole being stopped, and the whole covered with leaves and litter. If pots cannot be readily obtained, boxes will answer equally well. Some, however, consider either pots or boxes unnecessary, and merely cover the roots, about three feet thick, with leaves or litter. Others take up the roots, and either plant them in boxes, or plunge them in the old bark or soil, in a pit, frame, or house, where they will receive a moderate heat, or even in a dark cellar where they will be free from frost. By this system they will produce pretty well, with but little trouble; but many roots are destroyed every year. The usual method of propagation is by seed, which, I think, is the best, although many give preference to planting small portions of the root, cut into lengths of from three to five inches, to be planted in drills, like potatoe sets, about the end of March or beginning of April. Others prefer that the sets should not exceed an inch long. One system adopted by those who prefer raising from seeds, is to sow the seeds thinly on a bed, in an open situation, and, when the plants have formed a few of the first leaves, to take them carefully up, and shorten the roots to about eight inches long, planting them in rows four feet apart, and nine inches from plant to plant in the rows, in ground previously prepared for the purpose, placing the crowns about two inches below the surface. At the end of the first year, they may be forced, and at the end of two years, every other plant in each row may be taken up and planted in any other situation eighteen inches apart. Others object to forcing the first year, and also to transplanting; they prefer sowing the seeds in the situations where the plants are to stand regularly. Having divided the ground into beds four feet wide, with alleys eighteen inches wide, at the distance of two feet every way, sow a few seeds in a circle of about four inches diameter, and as soon as they have made three or four leaves, thin them out, leaving only three of the best plants in a triangular form, which by some are forced the first year, by others the second, and by others not until the third year. All agree as to the nature of the soil, viz., that it should be light and sandy, well trenched, and, if very wet, well

drained. The method I recommend, has answered perfectly to my satisfaction, and to that of my employers.

In sowing the seed, select a plot of good light sandy soil, in a situation most convenient to convey a proper supply of dung, beginning in December to dig the ground, at least two feet deep, and to give a good supply of rotten manure. If the ground be not naturally deep and light, it must be made so artificially, by adding vegetable mould and sand. If the situation be low and wet, it must be well drained, for much depends upon the dryness of the bottom, and the nature of the soil. The ground being thus prepared, in the beginning of February, commence sowing the seed, draw two drills, about an inch deep, and one foot asunder; then leaving a space of three feet, draw two more drills, one foot asunder, and proceed thus until sufficient drills are prepared for the seeds intended to be sown. Scatter the seeds thinly in these drills, and cover them with soil, not deeper than one inch. Keep the ground free from weeds, and the plants will soon be up.

Thinning the Plants.—When they have made three or four leaves, let them be thinned out to one foot asunder. And if they be kept clean during summer, they will by the autumn have become very fine plants, and be quite fit for forcing.

Forcing.—In the month of November, strip off all the leaves from the crowns of the plants; then take some quick lime, and scatter it upon, and round about the crowns, to destroy any slugs that may have taken shelter about them. Afterwards dig out of the three feet space, betwixt every two rows, a trench two feet wide, and deep enough to supply soil to cover the crowns of the plants in the two rows six inches deep. If the ground be strong, the soil of the trenches should be wheeled out, instead of being thrown upon the crowns, and the plants should be covered with old bark or light soil. When this is done, pots may either be placed over the crowns or not, at the option of the cultivator, as the shoots will grow very clear and fine without being covered with pots. Procure a quantity of dung from the stable, and fill up the trenches, covering the crowns, and making the whole one level surface, at least eighteen inches above the top of the crowns, which will give a thickness of two feet of dung, where the trenches are made. If dung cannot be conveniently obtained, leaves will answer the purpose very well, but it will be necessary to increase the thickness to two feet over the crowns, or two feet six inches in the trenches. In severe weather, if there be a deficiency of warmth, more dung or leaves might be added. It would not be necessary to cover all the rows with dung at once, but two or four,

according to the supply required ; and at the end of every fortnight, other two might be covered, until the whole were done. The first rows will be ready for use towards Christmas, and the succeeding ones would continue until *Asparagus* was ready in the open ground. I recommend sowing about every third or fourth year, and destroying the old plants ; for although they would possibly continue bearing for twenty years, the produce of the young plants is so very superior, that it will scarcely bear a comparison with that of the old.

ARTICLE III.

REMEDIES FOR MILDEW ON FRUIT TREES.

BY MR. W. TOWNSEND.

OF all the diseases to which trees are subject, I know of no one so rapid in its progress, or so fatal in its effects, as the mildew. So soon as it appears on the tree, vegetation ceases, and in a few days it is wholly covered, if its progress be not stopped. Men of science are but little acquainted with the nature or cause of this disease, and still less with a proper remedy. It is undoubtedly a species of fungus. Rather than notice the varying, and in many instances, contradictory opinions of writers on this subject, I will state the result of several experiments made with a view of finding some economical preventive for this disease. In the spring of last year, I washed part of my trees with lime water, thinking that if the disease were caused by insects, it would be the means of destroying them. Such was not the case, however, for it again made its appearance upon them, as well as upon those that were not washed. The lime and water being again employed with considerable force against the trees for a few successive evenings, when the disease first made its appearance, it was entirely eradicated ; consequently I came to the conclusion that washing the trees, when in a dormant state, is of no utility in destroying the mildew.

Mr. Harrison recommends that the following ingredients be applied just before the bloom expands. Having first sprinkled the tree with water, it should be dusted over (particularly the young shoots) with common sulphur, mixed with a little Scotch snuff and tobacco dust. This was found an effective remedy, when applied on the first appearance of the disease, but when applied to trees in a healthful state, it apparently had no effect, for the mildew appeared on the young shoots a few days after its application. It is evident, therefore, there is no preventive yet discovered.

Mr. Spuchler says two ounces of green soap, one ounce of turpen-

tine, and one ounce of flower of sulphur mixed together, and a gallon of boiling water poured upon them, the whole being worked well together to cause the ingredients to incorporate, should be applied in the same manner as the preceding, being gently stirred during the time of using, to prevent the sulphur from subsiding. This has also the same effect as Mr. Harrison's plan. I have tried the effects of lime and water, and sulphur water, and soft soap and water applied with force against the trees when the disease appeared, and continued till they were entirely clean, which happened in a few days. Water alone, if applied by a powerful engine, and early in the afternoon, is an effective remedy, but it must be regularly applied until the disease be eradicated. Water also invigorates the tree, acting as a watering to its roots; yet if applied too early in the afternoon, it causes the leaves to assume a brownish appearance, but otherwise it does the trees no injury.

Some of these experiments are attended with a deal of labour and expense, where wall trees are extensively cultivated, while others are so simple that I have no doubt they will be ridiculed by many. However, I will venture to assert, from actual practice, the latter are both simple and efficacious. The result of them will perhaps be questioned by almost every individual; yet I believe that few, if any, will be more surprised at the issue than I have been, after a fair trial.

ARTICLE IV.

ON THE CULTURE OF SWEET AND BITTER HERBS.

(Continued from page 390.)

ROSEMARY.—*Rosemarinus officinalis* is an evergreen shrub, a native of the South of Europe, and was cultivated here in 1548. It yields, by distillation, a light pale essential oil, of great fragrance, and which is imparted to rectified spirit. It is the herb used in the manufactory of Hungary water. It grows wild in great abundance in Italy, Spain, Provence and Languedoc. In the latter place, it grew so abundantly about the sixteenth century, that the inhabitants used scarcely any other thing for fuel, and the perfume is said to have been perceptible at sea, at the distance of nearly twenty miles. It was formerly woven into coronets, and wore at weddings as emblematical of fidelity. It was much used at funerals as a token of remembrance. Rosemary tea is drank for head-ache, and is used by persons of weak nerves. It was of great esteem among the Roman Physicians. In this country, the sprigs were formerly stuck into

beef while roasting, which were said to give the meat a very pleasant flavour. *Culture*.—It is readily propagated by slips and cuttings, which may be taken off five or six inches long, and planted in any lean dry soil, or in any rubbish of old buildings, where, if the situation be a sheltered one, it will thrive for many years without being damaged by the cold of our winters.

Rue.—*Ruta graveoleus* is a native of the south of Europe, and was cultivated here in 1562. In the time of Queen Elizabeth it was called *Herbegrace*, or *Herb of Grace*, because it was used for sprinkling holy water; indeed in many places it still bears the same name. The ancients employed this herb in various superstitious practices; they believed that, if stolen from a neighbour's garden, it would prosper the better. The Greeks used *Rue* and *Parsley* as a border for their gardens. According to Pliny, it was taken in wine to cure the head-ache, the juice of it was also considered an antidote against the bite or sting of any venomous creatures. It was supposed to be capable of strengthening the sight; and many other excellent properties were ascribed to it. *Culture*.—It is propagated by slips and cuttings, in March and April, and is of the very easiest culture, thriving in almost any soil, providing the situation be sheltered from cutting winds, and exposed to the sun.

Sage.—*Salvia officinalis* is a native of the south of Europe, and was cultivated here about 1597. Its generic name, *Salvia*, is derived from the word *Salvus*, on account of its healing qualities. The English name is borrowed from the French word *Sage*; which signifies *Wise*, from the supposed property this herb possesses of strengthening the memory, and rendering people wise. The Dutch dry their sage-leaves to resemble tea; for which they collect not only those of their own growth, but great quantities from the south of France. They pack them in cases, and exchange them for tea with the Chinese. Sage leaves were formerly much used in making cheese, but this practice is now nearly discontinued.

It was formerly much used in medicine, the leaves and tops for debility and relaxation of the nervous and vascular systems; in weakness of the stomach, as well as an antiscorbutic. It is said to possess many other excellent properties, but it is chiefly used in this country for sauces, and in stuffings for meat.

Culture.—All the varieties may be propagated by slips and cuttings, in April or May. Cut them off about six inches long, and let them be planted either six inches apart in a bed, or in any other way, which may be most convenient. They will succeed in almost any soil or situation. A fresh plantation will require to be made every three or four years at farthest.

SAVORY.—There are two species of Savory cultivated in our gardens, the summer, *Satureja hortensis*, and the winter, *S. Mountana*. The former is a hardy annual, a native of Italy, and has been cultivated ever since 1652. The latter, a native of the south of France and Italy, was cultivated a century before, or perhaps much earlier. Savory was used by the Romans as a spice, to give warmth to lettuce and other cool salads; and also for many purposes in medicine.

Culture.—Sow the seeds of the summer Savory in April, on a warm border of light sandy soil, either in a bed or otherwise, as most convenient. Gather for drying just before it comes into flower. The winter Savory may be raised from seeds, in the same way as the annual or summer species; but the more usual way is by slips, or by dividing the plant, in March or April, to be either planted in beds nine inches or one foot apart, or in a single row as an edging, in which case they may be planted pretty close.

TANSY.—*Tanacetum vulgare* is a native of Britain, growing plentifully on the banks of the river Derwent, and the sandy banks of many other rivers. The juice of the young leaves was formerly used in puddings, to which it imparted a very pleasant flavour. It is now very rarely used for domestic purposes, although our forefathers considered it a very necessary ingredient to mix with their cakes of bread, to be eaten during Lent. This herb was thought to be useful in relieving the stomach of phlegm, occasioned by constant fish diet, and for removing flatulency. It was also considered of service in many other diseases. *Culture.*—It is propagated by dividing the roots and planting them out in any common garden soil, in the open part of the garden, either in spring or autumn.

THYME grows most abundantly, in its natural state, in the South of Europe. Greece was celebrated for its thyme, on account of the excellent honey which it afforded. The Romans made great use of thyme in medicine. It yields a species of camphor, in distillation with water. The culinary use of it is principally for broth and ragouts. In Spain, they infuse it in the pickle with which they preserve their Olives. *Culture.*—The common Thyme is propagated by seeds, which may be sown in March or April; or by a division of the root. Plant out the slips in a bed, or other situation as may be thought proper. The Lemon Thyme is usually propagated in this manner, and thrives best in a light dry sandy soil. Gather both sorts for drying as soon as they come into flower.

ARTICLE V.

ON THE REGULARITY OF HEAT AND ECONOMY OF FUEL,

Effected by Witty's Patent Gas Furnace.

BY MR. I. CHANTER, CHEYNE WALK, CHELSEA.

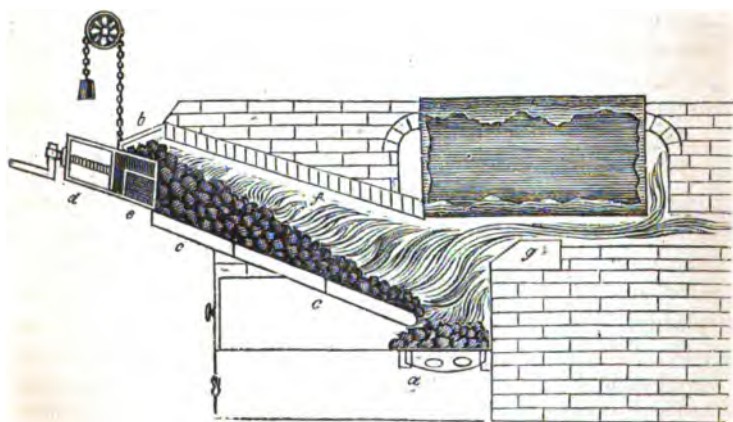
IN your Magazine, page 315, of the present volume, there is an attempted description of Mr. Witty's Patent Gas Furnace, but your correspondent, Mr. Wm. Grey, quite mistakes the subject, and his description is not by any means calculated to gratify your subscriber in Sussex, E. Ebury. In the first place, there is no such thing as smoke evaporating from the fire, nor does it stagnate. This is an erroneous description of the power of this much celebrated furnace, and surely Mr. Grey can never have witnessed the furnace properly in action, or the one alluded to must have been erected contrary to Mr. Witty's principle. The gas furnace is now getting into general use, not only for horticultural purposes, but in its endless application to the arts and manufactures, from the metropolis to the most distant parts of the united kingdom, above 500 have been erected since January 1832, and considerable numbers are now being erected. I will give you a description, borne out by twenty of the most eminent horticulturists in the kingdom, who have them in use. "The gas furnace is a combination of great chemical and mechanical knowledge, and was invented by Mr. Witty, the civil engineer. In the first place, there is a carbonizing plate or shelf constructed, on which the coal is submitted to two processes, viz. carbonization and combustion. Over the carbonizing plate is formed an arch of fire tile, or Stourbridge brick; the arch radiates sufficient heat to produce a powerful effect upon the coal, which instantly gives out plentiful streams of carburretted hydrogen gas. The gas being thus formed at a high temperature, is immediately inflamed by a due proportion of atmospheric air rushing through the heated coke at the bottom of the furnace, which, meeting the gas, produces a brilliant and lasting fire, and from its purity of flame prevents soot from lodging in the flues, if common attention be given at the first lighting; and it can be kept in for months together without relighting, if required. It appears that Mr. Grey laboured under an error, arising from the mismanagement of the furnace to which he alludes, since nothing can possibly work better, or produce so great and beneficial an effect as the Gas Furnace, if erected and worked according to Mr Witty's directions, whether applied to flues or hot water boilers. In proof of which, I beg to refer you to a list of testimonials, in a book now sent

you, with a drawing of its construction, and more particularly to the reports of Messrs. Wilnot of Isleworth, M' Intosh, Claremont, and other practical and celebrated horticulturalists, which must convince you of the great importance and utility of this furnace for all purposes. The great injury and annoyance arising to conservatories, gardens, and neighbouring dwellings, under all preceding constructions of furnaces or stoves, are, by this invention, wholly and most perfectly removed. In the interior, under the highest temperature ever required, the heat is genial and bland; no particle of smoke or suffocating vapour is perceptible to the senses, or by those tests which can, under such circumstances, be applied. The flue has been opened, and at 80 degs. appears to contain or convey nothing but a perfectly sweet moist heat; nothing escapes from the chimney but a slight steam, and probably carbonic acid gas, as pale and as harmless as the steam from the waste pipe of an engine. A similar relief from nuisances, and from much greater injury, is obtained by the adoption of this furnace in delicate manufactures, in dyeing, bleaching, washing, brewing, &c. &c. and in chemical manufactures. With regard to the profit arising from a diminished consumption of fuel, the advantage, varying from one quarter to one-third, is common to all cases whatever, from the domestic stove to the vast engines which, in their operation, render the mines of our country almost as valuable as its surface.

In order to justify the foregoing statement, it will be necessary to refer to former usages, and point out whence the present advantages arise. The common furnace has usually consisted of a large grate, which formed the floor and support of the fire, and it was generally surmounted by an arch or boiler, or any body to be heated. It frequently, but not always, had two doors, one to admit the fuel, the other to facilitate the stoking, and to draw the ashes; but this extensive extent of grate admits too much air, by which the fire is kept below the temperature required to consume the smoke; and omitting all consideration of the clouds of smoke vomited during the first kindling and raising the fire, a similar emission of clouds occurs whenever a fresh supply of fuel is required, until the parts of the coal, which sublime in dense smoke and soot, are dispersed in nuisance and waste. The great cause of this is, that the moment the door of the furnace is thrown open, a vast rush of cold air sweeps under the boiler, or through the flues, and carries away the heat; then the cold, raw, or perhaps wet coal is thrown into the centre of the fire, which reduces the temperature, destroying in one moment all the effect required, liberating the product of the coal in an imper-

fect state at a low temperature, and thus producing volumes of thick smoke, which, when once formed, it becomes impossible to burn, except at a temperature that will melt iron, which is stated to be 3000 degrees, and this of course would require an amazing quantity of fuel. In Witty's Patent Gas Furnace, a certain proportion, say about a third only, of the floor consists of a grate, (*a*) between which and the feeder, (*b*) an inclined plane is placed, (*c*) at an angle of 30 or 40 degrees: instead of the common door or doors, a sufficient orifice is well fitted by an iron box, (*d*) the part of which, nearest the fire, is left open in the form of a hopper or feeder, to receive the charge of fuel.—A flap is closed upon the fuel, and it is pushed forward on the inclined plane by a smaller box, or square piston (*e*), fitted within the hinder part of the large box, moved by a screw, by which it is brought back to its first position when a fresh supply is required. An arch of brickwork (*f*) covered by the best non-conductors of heat, such, as powdered charcoal, or sawdust, &c. surmounts the plane, and leads to the flue, to the bottom of the boiler, or to the body to be

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heated. A breastwork of brick behind (*g*) projecting a little over the grate, gives a proper direction to the current of air rising through the fire. This arrangement being completed, a fire is made on the grate; the plane is covered with fuel, and the mouth well closed; the plane and the arch are thus converted into a retort. The heat of the fire, and of the hot air rising through it, which is strongly reverberated from the arch, promotes the distillation of the nearer portions of the fuel; the vapours or gases, as they rise, are whirled into the current towards the flue, and meeting with the rush of heated air through the fire, are inflamed and completely consumed. This process con-

tinues till the coal is perfectly coked. When a supply is required, fresh coal is placed in the feeder, and thrust on by the screw and box, which thus pushes forward the coke on the plane, till it falls on the grate, and then serves to distil and coke the new quantity.

It is evident that the advantages of this new furnace are very great, as the numerous testimonials forwarded to us by Mr. Chanter, the present proprietor, abundantly prove, and to which we may append our own experience, having erected some at Chatsworth. The command of heat is much greater, with less trouble, and the annoyance from smoke, for the most part, is removed. Mr. Wilmot, of Isleworth, in writing on the advantages derived from some which he has had erected, says, "After three months trial, I can now give you an account of the difference between your gas furnace, and those on the old principle: the former has that decided preference, *that it only requires to be made known to be universally adopted*. I put the lights on two vineries, sixty feet long (each), heated by hot water, on the 10th of January; the houses joining each other with a glass partition between, the boilers and pipes both of the same construction: as such we started fair. The result is, that from that time until this date, April 13, 1833, the gas furnace is one month earlier than the old one, and both houses have as good a crop of grapes as I ever saw grow. In February, I put the lights on two more vineries, of the same construction, but heated with flues instead of hot water; one is worked with the old furnace, and the other with your's. Your's has again the preference of nearly one month; and I have no doubt I shall cut grapes in it a month earlier than in the old one, and both houses have as good as I ever wish to have. The one I have attached to a pine-house is certainly in the same proportions, but the smaller one you last sent me to try the experiment exceeds all. It is under a small boiler which works from three-inch pipes, in a house put up on purpose; and although but eight inches, I consider it capable of heating any house, provided it be worked with hot water pipes. The use of the gas furnace is the greatest saving that can possibly be invented, not only in the consumption of fuel, *but of the labour*, while the uncertainty attending the old furnaces is entirely obviated, and one person can attend to twenty of your's, with more ease to himself, than to four of the old ones. The certainty of being able to leave it twelve hours *in early firing*, without finding any material difference in the thermometer, speaks more for this valuable discovery than if I were to write a volume on the subject." Mr. M'c Intosh, gardener at Claremont, writes as follows: "The economy in fuel is more than one-third, nearly one-half. The trouble of

attending them is next to nothing, as they are done up for the night at six o'clock in the evening: and even in cold weather, do not require any other attention till seven or eight o'clock next morning, and in mild weather not till five or six o'clock on the evening following. In consequence of the extraordinary degree of heat produced in the furnace (nearly 3,000 degrees of Fahr.) not only is the smoke consumed, after the fire has been burning for a short time, but all those noxious gases which attend flues heated in the ordinary manner are entirely destroyed. The gaseous steam produced by your furnace is by no means injurious to the most delicate plant, probably the reverse. Several plants submitted to its effects were not in the least injured; neither does it appear, by a careful chemical analysis, that it contains anything injurious to vegetation."

FLORICULTURE.

ARTICLE VI.

ON THE CULTURE OF THE NATURAL ORDER ERICÆÆ,

BY T. K. S.—(Continued from page 360.)

BLÆRIA-(*P. Blair*, F. R. S.) This Genus differs but little in habit from the *Erica*. All the species are natives of the Cape of Good Hope, and, therefore, require the shelter of the greenhouse. They may be propagated by young cuttings, planted in sand under a bell glass, and placed in a shady situation, without moist heat.

SYMPIEZA-(*Sympiezo*, to press together) requires the same treatment as *Blæria*.

ERI'CA—(*Ereiko*, to break.) This Genus requires peculiar treatment to ensure perfection of growth, but it is not difficult to keep, provided that proper soil be obtained, and the situation in which it is placed, be suitable. The free growing kinds appear to thrive best in good black peat, and large sized pots, whilst the dwarf and hard-wooded sorts always succeed better in a very sandy peat and small pots, well drained with plenty of broken pots and bits of turfy peat. They will not endure so much water as the free strong growing kinds, because they grow naturally in situations where there is little soil and less moisture. They require a considerable portion of air, without which they are liable to be attacked by the mildew. If this should happen, keep a dry atmosphere by giving a free circulation, and syringe the plants with sulphur and water. They are very impatient

of being crowded together, and seldom prosper unless kept at a considerable distance from each other. Fire heat is generally injurious, and should never be used except to prevent the plants from being injured by frost. The greater part of them might be kept, thro' the winter, in a common frame, if any plan could be adopted to ensure a dry atmosphere. The system of high potting Vol 1 p. 456, which by many has been thought a great advantage, was first introduced by Mr. M'Nab, of the Edinburgh Botanic Garden, whose excellent pamphlet on heaths you reviewed in Vol 1, page 455. The system has since been adopted by Mr. Bow, of Lower Broughton, near Manchester, one of the best heath-growers in this country, and in both the Liverpool and Manchester Botanic Gardens. These plants are not very subject to attack by insects, but if troubled with the Aphis or green fly, the usual system of smoking with tobacco must not be resorted to, for they are very impatient of smoke, and after being subjected to it several times, they not unfrequently die without any apparent cause. The best growers make a practise of dipping the infected plants in some tobacco water, or if they be too large, they syringe them with it, and afterwards syringe them with pure water.

Propagation. The stronger growing sorts should have the cuttings made rather larger than the dwarf growers; it is the custom with many to place some of the latter in a hothouse for awhile, to draw the cuttings a sufficient length. When the young shoots are about an inch long, take off the cuttings, handling them delicately whilst trimming; some cast them into a pan of water, until a sufficient number are trimmed to fill a pot; others object to this system as injurious. The fact is that some of the strong growing sorts are in no respect damaged by it, but others of a more delicate foliage and slender growth are often destroyed by being thus saturated with moisture. As regards the filling of the pots, this may be done either with finely sifted peat, to within an inch of the top, the remainder being a covering of fine sand; or the whole pot may be filled with sand, as stated in Mr. M'Nab's pamphlet, page 456, and which appears to answer the best. For although they may strike equally well in both materials, under proper treatment, yet when they are taken up for potting, the fibres are not so liable to be broken in sand as peat. Whatever the pots are filled with, they must have plenty of drainage. The cuttings may then be planted with a small dibber about the size of a quill, then being watered with a fine syringe, until the whole soil is saturated, place on a glass, and set the pot in the front of a greenhouse. If the weather be fine, it is very likely the plants may require watering with a very fine rose almost every morning, during the first week or two, and

afterwards twice or three times a week, until they begin to grow, which will be in five or six weeks, and in about nine or ten weeks they will be ready to pot off. Some of the easy growing sorts may be planted under a handglass, on a north border where they will grow very freely if kept from being injured by worms. The seeds of *Erica* should be sown thinly, in pots and boxes filled with fine sifted peat, as soon as possible after it is gathered. When up, the young plants must not be over-watered, indeed in damp weather and winter they should be kept rather over dry than otherwise, which will obviate their liability to perish by mildew. I shall add no more at present on this subject, but refer your readers, for the general culture, to the excellent practical observations of Mr. M' Nab, in page 455—458.

MENZIESIA.—(*A. Menzies*, *F. L. S.*) These have all much of the habit of the *Erica*, and require similar treatment. The usual method of propagating is by layers or seeds. All the species are perfectly hardy.

(*To be Continued.*)

ARTICLE VI.—MORE OBSERVATIONS ON THE CULTURE OF THE POLYANTHUS, (*PRIMULA VULGARIS*.)

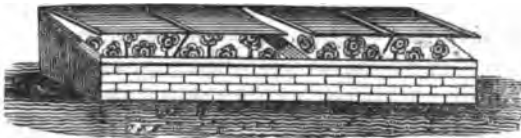
BY MR. JOHN REVELL, PITSMOOR, NEAR SHEFFIELD.

"Starting up between

Dead matted leaves of Ash and Oak, that strew
The every lawn, and wood, and spinney; through
Mid' creeping moss, and ivy's darker green.
How much thy presence beautifies the ground;
How sweet thy modest, unaffected pride
Glow's on the sunny bank, and wood's warm side,
And where the fairy flowers in groups are found.—
The school-boy roams enchantedly along,
Plucking the fairest with a rude delight,
While the meek shepherd stops his simple song,
To gaze a moment on the pleasing sight."

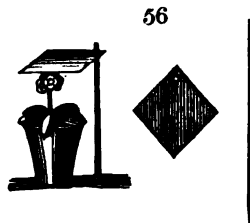
The following additional observations on the culture of the Polyanthus are not intended to make void anything stated in a former paper, inserted Vol. 1, p. 448. I continue to use the same compost, and to follow the same general system of treatment. From the end of November until April, keep the plants warm, by placing them in a common frame or brick pit, (Fig. 55) which should be sunk, or built

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lower than the surface of the ground, so that, the plants in pots, when in full bloom, should be no higher than the level of the surrounding

ground. This frame or pit should be covered with wooden shutters instead of glass, to keep out the frost and bad weather. Let the plants have the benefit of the gentle rains, which fall in January and February, whilst forming their flower buds. As soon as these are ready to expand, water them with a little liquid manure, drainings from the dunghill, three times a week, and shade the buds with small boards placed on sticks, (fig. 56) to keep off the dews or rains while they are exposed in the day-time. And to render the colours brilliant and clear, give them one hour's sunshine in a morning.



When the blooming is over, place them under a south wall to ripen their seed. In general the roots may be divided by the latter end of May. A single heart being planted in each pot, cut off all the large eaves, leaving only the small leaves of the heart entire; plant them in a light sandy soil, mixed with one third of new horse-dung. Water them gently with soft water every evening, and never suffer the soil to become too dry and parched. By these means they will become fine plants by the winter, when they must be placed in the pit or frames and kept warm, as recommended for the others. Prop up the shutters, as seen in the engraving, when air is wanted, or slide them quite off when you wish to give them the benefit of a gentle shower. After the buds are swollen, and are ready to expand, whenever the shutters are propped up and the sun shines, or when they are quite uncovered to receive the benefit of rains, be careful to shade them with the board (Fig. 56), for if the sun be allowed to shine upon them, the dark velvet of the flower becomes red, and the fine orange of the eye and edge becomes buff coloured.

To make the pips or flowers completely flat and even, the instrument made of ivory (fig. 57) must be used.

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If the flower be cupped or hardly expanded, press the flattener on the pip, and it will become quite



even; and if the bloom turn back, as is the case with the *Defiance*, and many others, take the flattener and place it under the pip, betwixt the calyx and the corolla, drawing it in through the part taken out of the eye of the flattener. Then taking a camel hair pencil, brush over the top of the pip, which will greatly improve the appearance of the flower. Be very careful, during the month of April particularly, that the buds are not injured by slugs, for they will not feed on the other parts of the plant, if they can reach the buds; see Vol 1, page 448.



GEORGE THE FOURTH POLYANTHUS.

It often happens, that about June and July, very many plants die without any apparent cause. This has been attributed by some to a want of pure air, and an elevated situation : hence a conclusion has been drawn by eminent florists, that the polyanthus cannot be grown to perfection, in the neighbourhood of large towns. From this opinion I beg leave to dissent, for, in the neighbourhood of Sheffield, the finest specimens have been invariably grown in low situations. And although the air is far from pure, the plants in general grow to very great perfection. I do not deny that some die from this cause, but I think by far the greater part perish through inattention, during the month of May. At the period just mentioned, they generally throw out fresh fibres from amongst their leaves, and thus indicate a want of more support than the old roots are capable of furnishing. It is in fact an effort of nature to obtain that support. When this is observed, loosen the earth in the pots, and add some new soil, sufficient to cover the new-made roots ; for if this be neglected, the plants often become languid and sickly, and not unfrequently die. I have subjoined a statement of all the best sorts, exhibiting at one view the number of prizes won by each flower, at the several meetings, during the year 1833.

CLASSES.

P. P.	1	2	3	4	5	6	7	8	TOTAL.
Pearson's Alexander,.....	7	13	3	4	1	..	..	..	28
Cox's Prince Regent	1	3	3	4	2	..	2	1	17
Buck's George the Fourth....	2	3	3	3	2	..	1	1	15
Collier's Princess Royal.....	1	4	2	..	2	2	1	..	12
Clegg's Lord Crewe.....	..	..	2	1	2	3	2	..	10
Nicholson's Bang Europe	1	1	3	1	2	1	..	..	9
Eckersley's Jolly Dragoon....	..	1	2	2	1	2	..	..	8
Turner's Princess .....	..	..	2	1	2	..	1	2	8
Sir Sydney Smith .....	..	1	..	2	2	..	1	..	6
Crownshaw's Invincible.....	1	..	1	2	1	1	..	..	6
Fletcher's Defiance.....	..	..	..	..	3	2	..	..	5
Waterhouse's George IV .....	..	1	1	..	1	..	..	..	3
Lord John Russell.....	1	1	..	1	1	..	..	..	4
Beauty of Coron.....	..	1	..	1	..	1	..	..	3
Biddle's Elizabeth	1	1	..	..	..	..	..	..	2
Clegg's Commander	1	..	..	..	1	..	..	..	2
Revell's Buckingham ....	..	..	1	..	..	..	..	..	1
Rock's Mary Ann	1	..	..	..	..	..	..	..	1
Chilwell Hero .....	..	1	..	..	..	..	..	..	1
Revell's Othello ....	..	1	..	..	..	..	..	..	1
Buck's Huntsman .....	..	1	..	..	..	..	..	..	1
Burn's Fimosa.....	1	..	..	..	..	..	..	..	1

The above is a selection of the most popular flowers among Polyanthuses, and although numbers of seedlings are raised every year, many thousands may be raised before some of the above can be surpassed, particularly Pearson's Alexander, George IV. (Fig. 2), Formosa, Crownshaw's Invincible, Buck's George IV, Cox's Prince Regent, &c.

ARTICLE VIII.

ON PROPAGATING AND PRESERVING GERANIUMS.

BY MYSELF.

THE following method practised during winter, may perhaps be useful to such of your readers as do not possess a greenhouse, but are admirers of the brilliant effect produced by the Scarlet Geranium in the open borders. I have tried it several years with great success, and trust its simplicity may be a recommendation. Cuttings should be taken in the month of September or October, and planted in a warm situation under a hand glass. They should remain in the ground in the winter, and at night the glass should be covered with a mat to keep out the frost. In April or May, or as soon as the weather will allow, they should be removed into the open border without disturbing their roots, and they will soon become fine plants and bloom plentifully. Damp is very injurious in the cold weather, and therefore, if possible, they should never be watered during that time, and all decayed leaves should be carefully picked off. Cuttings of many other kinds of Geraniums, if struck in pots in the summer or autumn, will bear much more exposure to the cold than older plants.

August 27th, 1833.

NATURAL HISTORY.

ARTICLE IX.—PECULIARITIES OF PLANTS,

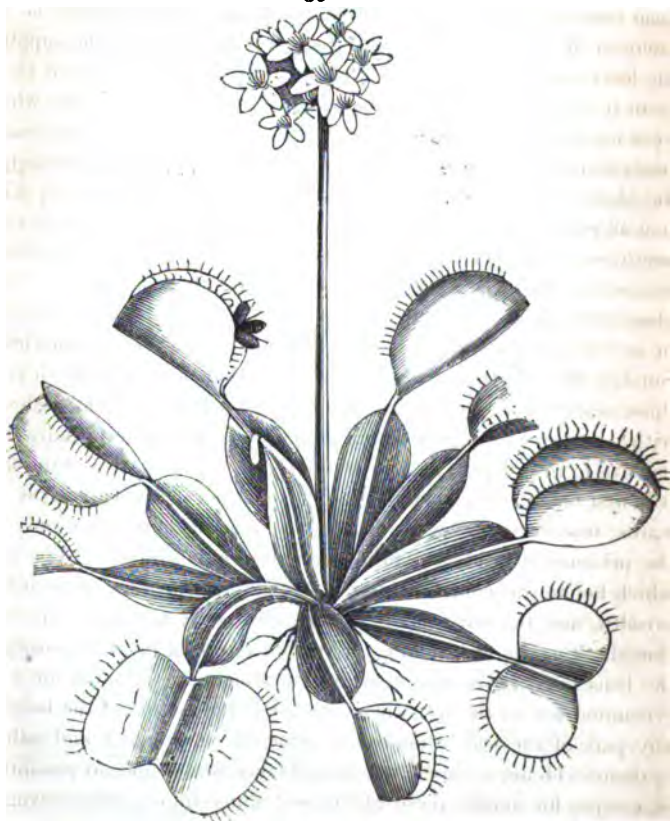
With some Observations on those which possess, or are supposed to possess the power to entrap Insects.

BY JOSEPH FAXTON, F. L. S. H. S.—(Continued from page 336.)

OUR former remarks on this subject were chiefly confined to some of the plants having peculiar appendages attached either to their leaves or some other part of the plants, into which, being hollow and containing a liquid, insects of different kinds are, from some unknown motive, induced to enter, and from which, on account of certain impediments, they are totally unable to escape; consequently the hollow appendage becomes their grave, but whether their death is necessary to the well-being of the plant we cannot decide, and therefore we leave the question as we found it. We now propose to notice a few of those which have the power of entrapping insects by the contractility or irritability existing either in the leaf or flower. Amongst those possessing irritability in their leaves, none are more remarkable than the *Dionaea*

Muscipula, or Venus's Fly-trap, (Fig. 59). This plant has jointed leaves, furnished on the edges with a row of strong prickles, and what is called the leaf is supposed to be the petioles, which are winged like those of the orange, so that it is the proper leaf which operates as the trap. Some persons have thought that the winged petiole, or leaf-stalk, is the true leaf itself, and that the trap is merely an appendage; this latter notion, from the appearance of the plant in our possession, strikes us as being the most probable. There is a sweetness, secreted in glands on the surface of the trap, which appears to attract flies, and no sooner do they venture to settle on its surface, than the sides of the leaves spring up after the manner of a rat-trap, and locking their rows of prickles together,

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squeeze the insects to death; after which it again expands. Linnæus and others thought, that if the insect ceased to struggle, the leaf would open and liberate the prisoner. This might possibly be the case, if it were perfectly quiet, but the least irritation keeps it fast closed. Ellis says the lobes never open again, so long as the animal continues

therein, that is, so long as it remains a perfect insect, or in other words, until it becomes a skeleton. However correct this idea may be in some instances, it does not appear to hold good in all, for some plants of the kind in our possession begin to open soon after the little insect's death, and in the course of a short time the plant is expanded as it was before. A straw or a pin touching the middle of each lobe has the same effect as the legs of an insect, (for the chief seat of irritability appears to be in three small hairs situated in the middle of each lobe,) but after these are withdrawn, the lobes will again open in the course of an hour. What can be the use of this extraordinary irritability is not at present discovered; Sir J. E. Smith believed that the dead insects were beneficial to vegetation, and this opinion so far influenced Mr. Knight, of the King's Road, London, that he supplied the leaves of a plant with fine filaments of beef, and from that treatment it grew more luxuriant than some others in his possession which were not treated after that manner. This experiment goes far towards confirming the opinion that the dead insects are intended to supply the plant with animal manure. Dr. Barton, however, does not think it at all probable, that either this plant, or others which grow in rich, boggy, soil, can need additional stimulus. However, there is no doubt that some wise end is answered by so extraordinary a means. The plant grows in the bogs of Carolina, the flowers are white, and grow in corymbs, resembling Umbels. There are also several species of Sundew (*Drosera*), which exhibit a similar phenomenon in the leaves; those near the root are covered with long red bristles or hairs, bedewed with a sticky juice, possibly of a poisonous quality, especially destructive to insect life. If a fly settle on the upper surface of the leaf, it is first detained by clammy liquid, and then every hair turns inwards, towards and over the insect, and remains curled, not only till the prisoner is dead, but until he is entirely consumed. The disc, which before was contracted and cone-like, then expands to its fullest breadth, and the hairs again become erect. It has, however, been thought, that its fly-catching powers only consist in the viscosity of the leaves and hairs, and that any movement in the latter may be accounted for on the hypothesis, that by the motion of the hairs or any part of the leaf, others may come in contact with and adhere to them. Hence an insect touching the leaf would find no possibility of escape, for amidst these globules of slimy liquid, every struggle would but render its extrication more impossible. Scientific men are equally at a loss to account for the use of the fly-catching properties of this plant, as they are of that which exists in others. Some have thought it to act merely in accordance with the law, by which one thing preys upon another, so that nothing may become too abun-

dant, and thus the *Drosera* is made an instrument of destruction useless to itself, but subservient to the general good. There is also something peculiar in the time and manner of the flowering of this genus, for few of the species are ever observed with their flowers expanded, and some persons have concluded, that they either never properly expanded, or that their expansion took place at sunrise, and they quickly closed again; or that it occurred at night. The fact is, they open about ten o'clock in the morning, and generally are closing about twelve. The usual flowering time is July, when they may be found in most of our marshes. The leaves have a very novel appearance under a microscope;—their loose cellular tissue glistening like gold, the fine long scarlet hair, tipped with a crimson knob, from which there exudes a clear white liquid, which on being touched with the finger will draw out into a transparent thread more than an inch long, are all seen to very great advantage. Their medicinal properties appear to be very trifling, for the most part they are acrid and poisonous.

But sometimes the irritability wholly resides in the flower. This is the case with the common Berberry bush. The manner in which the stamens are spread out renders them incapable, without some assistance, of casting their pollen on the head of the stigma. When an insect enters the flower in search of honey, and its legs or body touch the inner part of each filament near the bottom, which it cannot well avoid, the filaments immediately contract, each of them bending over strikes its head against the top of the stigma, where it deposits the pollen, and by this means imprisons the insect. Its confinement however, is seldom of long continuance, for after a time some degree of exhaustion appears to take place, and the stamens become partially flaccid, of which the insect generally takes advantage and makes its escape. After this, they fall back to their usual situation, and shortly recover their irritability, which continues not merely whilst the anthers are discharging the pollen, but extends more or less beyond even the falling of the corolla. No remarkable movement of the stamina takes place, on touching any other part of them than the inner part of each near the bottom. The stamen of *Opuntia Tuna*, a South American plant, introduced in 1731, is endued with a similar irritability, but the stamina do not form so compact a prison, as *Berberis*. Another plant, the produce of our British woods, presents also a very curious structure;—the *Aristolochia Clematidis*. Of this plant, which is so curiously formed, Professor Willdenow asserts, that the anthers of themselves cannot impregnate the stigma. The throat of the flower is lined with thick hair or bristles, pointing downwards, so as to form a funnel similar to the entrance into a wire mousetrap. The

insects may very easily walk in, but are totally unable to return, in consequence of the points of the hairs meeting them. It sometimes happens that several enter into one flower, where, their confinement becoming irksome, they keep constantly moving about, and thus stimulating the filaments, the anthers deposit the pollen upon the stigma. But after impregnation is performed, the hair shrinks, becomes flaccid, hangs down close by the sides of the flower, and the little prisoners then leave their cage. The insect that frequents this plant is a species of gnat (*Cecidomia*), although a writer in the *Annual Medical Review* doubted the accuracy of the fact; but it has since been proved, by ocular demonstration, the flowers inclosing the very insects having been sent several miles.

ARTICLE X.

ON THE PROXIMATE CAUSES OF WINDS AND STORMS.

BY PROFESSOR MITCHELL,—*Continued from page 414.*

III. There is in all latitudes (a few tracts of limited extent where local causes have a decided effect excepted) a predominance of winds blowing from the poles towards the equator, over those moving in the opposite direction, but this predominance is not so well marked and decided as that of the westerly over the easterly winds between the latitudes of 30 and 60 degrees. Daniell states, that in Great Britain, upon an average of ten years, "the northerly winds are to the southerly as 192 to 173," and that "in the central parts of Europe the northern winds are much more regular; and that there, especially in summer, the Etesian breeze constantly prevails." Cotte's tables do not indicate the predominance and permanence of northerly winds in that quarter of the world, which is asserted by Daniell. Of the capital cities heretofore mentioned, Aleppo, Bassora, Berne, Petersburg and Stockholme, appear to have an excess of northerly winds, Amsterdam, Berlin, and Copenhagen, of southerly; while at Bagdad and Paris, the excess on either side is inconsiderable. These tables were however, published in 1788, after the work to which they are attached had been in press for some years. The information they afford respecting Germany is very meagre, whilst the subject of meteorology appears to have excited an extraordinary degree of interest in that country between the years 1781 and 1792, so that Daniell may have had access to documents by which his assertions were fully warranted. It is stated in the *Encyclopædia Perthensis*, that at St. Petersburg the northerly winds were found, during a term of 16 years, to be to

the southerly as 133 to 119, the westerly were to the easterly as 133 to 92, and that in the Mediterranean the north wind blows for nearly three fourths of the year. In that part of the Atlantic Ocean lying beyond the northern limit of the trade winds, between the United States and Europe, it appears that southerly winds predominate. Their cause is probably analogous to that of the Gulf Stream. The meteorological registers of Messrs. Field, Ohmsted, and Wallenstein shew an excess of northerly winds; others, as those of Drs. Beck, Lovell, and probably Hildreth, an excess of southerly winds; but in general the excess of the southerly over the northerly, where it obtains, is less than that of the westerly over the easterly. Thus, in the abstract of Dr. Lovell, the westerly winds are to the easterly as 12.59 to 9.63, the southerly to the northerly as 12.59 to 11.60. On the whole, there can be little room for doubt that the winds from the north predominate over those from the south within the limits of the United States. This method of estimating the amount of wind in any direction by the number of days it blows from that point, is exceedingly defective, and may (as where the wind is commonly violent in one direction and gentle in another, and the force with which it blows is altogether neglected), lead to the most erroneous results. This happens to be the case in this country. Our south-west winds prevail chiefly in the summer season, they are mild breezes subsiding often into a calm, which continues during a considerable part of the day. Our north-west winds, on the other hand, sweep over the continent day and night with a constancy and velocity which renders it necessary to make a considerable allowance when we are estimating the amount of movement in the atmosphere by the time during which it occurs. The north winds (*los nortes*), which are north-west winds, blow in the Gulf of Mexico from the autumnal to the spring equinox. These north winds, hurricanes generally, remain for three or four days, and sometimes for ten or twelve."

If there be a predominance of either northerly or southerly winds in the North Pacific Ocean, it is not such as to have attracted the particular attention of navigators. "On the north-west coast of America, from the straits of Behring to 30 degs. of northern latitude, the winds are variable. Captain Cook found in March, in the 44th degree of latitude, a fresh and constant south-west, which continued until the beginning of summer, with the exception of a south-east, which lasted, however, only six hours; and La Perouse, Portlock, and Dixon did not experience the south winds in the summer. According to Vancouver and the Spanish navigators, the north and north-west are the most prevailing. All this, however, applies almost

exclusively to the summer months. During the winter, Messrs. Lewis and Clarke, at the mouth of the Columbia river, had long continued gales from the south-west, and deluges of rain. The violent winds that prevail at Cape Horn are not accurately from the west, but from between the west and south." Cook's voyages into the high latitudes of the southern hemisphere being made when the sun was in the neighbourhood of the southern tropic, cannot be referred to, as affording information of unquestionable accuracy respecting the winds that prevail in those seas.

IV. Thunder storms generally commence between mid-day and sunset, and move from west to east.

Such persons as have paid any attention to the changes of the weather in this country, must be well aware that our thunder storms begin in the after part of the day, and move from west to east. They sometimes occur at night, but seldom after midnight. The direction of their motion does not appear to depend upon the predominance of the westerly over the easterly winds, being much more constant and uniform than that predominance; but to be a result and a proof of a commotion excited in the atmosphere at the time of their formation, and of a rush of the air from the west towards the east, in consequence of some new impulse just then communicated. The author of the article "Thunder," in the *Encyclopædia Perthensis*, states, that along the eastern side of the island of Great Britain, it is more frequent in the month of July than at any other time of the year, which he attributes to the circumstance that a wind from the west then succeeds to the east wind that had prevailed from April to the end of June. "For the most part, however, the west wind prevails, and what little motion the clouds have is towards the east, whence the common remark in this country, that thunder clouds move against the wind. But this is by no means universally true, for if the west wind happen to be excited by any temporary cause before its natural period when it should take place, the east wind will often get the better of it, and the clouds, even though thunder is produced, will move westward."

Of the remarkable thunder storms experienced in England from the year of the foundation of the Royal Society down to 1800, and noticed in the *Philosophical Transactions*, there are about thirty five. Of these, the beginning of twenty seven was between noon and mid-night, generally about three or four o'clock in the afternoon. One lasted all day, and the remaining seven were in the morning. The direction of twelve is given. Two came from the south, three from the eastern, and seven from the western quarter.

Dr. Young, giving the substance of a lecture by Longford, in the Philosophical Transactions of 1698, on the hurricanes of the West Indies, remarks from it, that, "all hurricanes begin between north and west. Their course is generally opposite to that of the trade winds. Tornados come from several points." Formerly their diurnal rains came on with such regularity, that it was usual, in forming parties of pleasure, to arrange whether they should take place before or after the storm. In an excursion made from Villi Rica to Labara, violent thunder storms were experienced almost daily; and the way these storms commenced, was singular. The sky was perfectly clear until about two or three o'clock, when some light white clouds were seen approximating the sun with great rapidity. Sometimes they all passed, but if one lingered, as if within its influence, thunder was heard, and in a few minutes no remains of a blue sky were visible. The storm commenced directly; when commencing in the direction of the sun at two or three o'clock, these storms begin in the west.

ARTICLE XI.

COLLECTIONS AND RECOLLECTIONS.

NEW GARDEN SEAT.—I have sent you the drawing of a garden seat, Fig. 60, which I designed and got executed; it has a very good effect either upon a grass-plot or under a tree. This seat is supported by three or more large leaves, according to the taste of the proprietor, and the back is formed of a similar number. A shield may be placed in the centre one at (a) upon which the initials of the owner might be engraved. The whole is formed of hard wood, at but little expense.

M. SAUL

HAVING observed that you sometimes insert extracts from old books, upon practical subjects, I send you a few

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more, taken from the "Original Agricultural Survey," published in 1794. They are quite miscellaneous, but many of them are very curious. Some may perhaps invite discussion as to their truth or their merits.

THE PINE-ASTER fir is not a valuable wood, but it stands the sea air without being injured. Mr. Praed found that sowing the seed in spring, as is commonly done by nurserymen, did not answer his expectations. He, therefore, threw a number of cones into an inclosed place, where they opened naturally, and dropped their seeds in the beginning of June, which is the time he has since selected to sow them both in his fields and nursery.

USE OF RUSHES.—"Follow nature." When Brindley was examined before the House of Lords, on the Duke of Bridgewater's canal, he was asked by a noble Lord how he contrived to render the banks, in a particularly difficult part, firm.—He said he sowed rushes on the bank; he was again asked at what season, he answered bluntly, "I observed the time that the rushes shed their seeds, and I sowed mine as nature did, could you have done better, my Lord?" *ib.* page 61.

HOW TO CUT UNDERWOOD.—Gorse or Furze is cut in February; too much caution cannot be used in providing the men with good tools, each man should have them fresh ground every morning. They are applied as close to the ground as possible, and the stem of the furze is cut clean off, with the edge of the tool turning upwards. Part of a field was cut in the usual way, within four or five inches of the ground, and the stubbs left ragged, by which the sun, wind and wet, penetrated, and destroyed a great number of plants. The same observation holds with respect to the other underwood.

DESTROYING RUSHES.—This is effected by a strong scythe, with a blade of about twenty inches, but curved differently from the common scythe. The edge is nearly set in a straight direction from heel to point, but the flat part of the blade curves about four inches from a straight line. The sneath or sneyd to which the blade is fixed, is about three feet six inches long, and has one scythe-like handle, at about eighteen inches from the top. When the work is performed, one hand is placed upon the top of the sneath, and with the handle in the other, the crown of the rush roots, by a smart stroke of the instrument, is scooped out with the convex part of the blade. The most proper season for this operation is in the spring.

MODE OF PREVENTING PIGS FROM ROOTING.—The gristly or horny part of the snout, through which the ring is usually put, is cut away with a sharp knife. By means this alone, with the not

slightest injury arising from it, the rooting is effectually prevented.

MISCHIEF OF TOO MANY PURSUITS.—Some of the most intelligent men in the country admit and lament the foulness of the Corn land, but allege the quantity of work to be done, and the scarcity of hands as a reason. Here are four harvests the Hay, the Corn, the Hop, and the Cider. The Herefordshire farmers have so much business between cider, hops, corn, and fattening cattle, that a part must be, and always is neglected. Many farmers consider cider making as an intrusion on operations of greater importance, and think one half of the time wasted in making it, and the other half in drinking it.

Note.—There is a great deal in this; the writer knows a farm of less than two hundred acres in Herefordshire, where the year before last twenty two hogsheads of family drink (as it is called,) that is, miserably low cider, were consumed in one year. The ill consequences of this system upon the people cannot be described. How much better it would have been, if the farmer had been without the liquor so wasted, and had been obliged to buy an adequate quantity of malt, and to manage the produce with economy. The same may be said of hops as grown in that country; they ruin farmers of little, or no capital, and they prevent the growth of corn and cattle, by taking all the manure off the farm.

CARROT TOP HAY.—The tops of a good acre of carrots will produce four tons of hay, of which all kinds of cattle are very fond, and upon which they thrive exceedingly. The tops shoot out very luxuriantly, as soon as cut. They are cut with a scythe, and care is taken not to injure the crowns of the plants by cutting too close. The root will increase in weight, as in parsnips, if so cut.

LIQUID MANURE.—In a country where there are so many cattle, it is wonderful there are no reservoirs for the urine. It is well known that cattle evacuate more by urine than by dung, and it is allowed that it is the best of manures.

DUTCH WILLOW. Mr. Bakewell, the great breeder, has several small plantations of Dutch willow in different parts of his estate, one of which he cuts annually at seven years growth. They run very long, and some of them are large, and are split and used for posts, gates, &c, for which they are very excellent. He uses no other kind of wood for these purposes. Mr. Lynes plants Ash and Dutch willow in low swampy ground, which cannot be well drained. They are on beds twelve feet wide, two rows on a bed, or each plant six feet apart every way. The alleys are dry between the beds, and the contents thrown on them; they are cut once in fifteen years.

PART II.

REVIEWS AND EXTRACTS.

EXTRACTS.

HORTICULTURAL INTELLIGENCE.

ON IRRIGATING GARDENS BY TANKS OR PONDS,—The garden of Thomas A. Knight, Esq. is supplied with water by springs, which rise in a more elevated situation, and thus afford him the means of making a small pond, from which he can cause water to flow over every part of the garden whenever he wishes. He thus irrigates his strawberry beds when in flower, and plants of other kinds, throughout the summer. A stream is caused to flow down the rows of celery, brocoli, &c. with very great advantage. But the most extensive and beneficial use made of it, is to water his late crops of peas. By this means the ill effects of mildew are almost wholly prevented, and the result is a good supply of peas throughout October. When water is delivered in the usual quantity from a watering pot, its effects for a short time are almost always beneficial; but if water be not continued regularly, injurious consequences frequently follow; for the roots of plants extend themselves most rapidly, wherever they find moisture and food; and if the surface alone be wetted, the roots extend themselves only superficially, and the plants consequently become more subject to injury from drought, than they would have been if no water had been given to them. When, on the contrary, the soil is irrigated in the manner above recommended, it is wetted to a great depth; and a single watering, once in eight or ten days, is, in almost all cases, fully sufficient.—*Trans. Hort. Soc. Part 4.*

CULTURE OF THE VINE.—The principal objectionable point to the long running system of cutting and training, is, that in an early forcing house, where the shoot has been laid in its whole length, of perhaps from 15 to 50 buds, there is great uncertainty as to such shoot bursting its eyes from one end to the other; nothing being more common than the destitution of both fruit and foliage in the lower part of the vine, while the upper part is crowded to excess with both. Authors have recommended different operations for the prevention of this evil, such as serpentineing, disbudding, &c., and the same have been acted upon by many practitioners, but without success. It is well known that every shoot possesses a natural inclination to break its extreme buds first, this is occasioned by the upper part of the vine when tied up being at a greater distance from the glass than the lower part, and consequently exposed to one and a half or two degrees more heat than the lower part. To counteract this, fix the shoot at about 10½ from the glass at its base, bringing its extreme end close to the glass by a gradual inclination, to about three parts of its length, and run the remaining part in close contact with the glass to its end. When all the lower buds have broken, the

extreme end of the shoot may be lowered, and the buds on it will also break. To study the variation in the heat of the glazed surface of a hot-house caused by radiation, is a subject worthy our attention, for although it appears that the uppermost surface is coldest in mid-winter, yet an effect directly the contrary is produced as the season advances, and a practice, contrary to the one now stated, is required, which can only be conveniently and effectually obtained by the use of a moveable trellis, fixed at its lower part, but capable of elevation at its upper end. This would not only secure by its use in the dreary months of winter, a good breaking of the vine at an early season, but it would give an advantage above the fixed trellis in other particulars, especially in the prevention of a disease common to grapes on their approaching a state of maturity. For whatever conclusion experience may end in, as to the cause of the disease, it is certain that the rays of the sun, falling upon condensed vapour, produce an air not very fit for a delicate and loaded plant to live and to flourish in: but as Mr. Judd expresses it, one that is calculated to produce an effect equal to scalding, in consequence of which the fruit becomes deformed, and ceases to acquire that state of perfection it otherwise would. But suppose the rays of the sun should raise the thermometer in a hot-house to 90 degs.; and that with all the air that can be admitted, it rises still higher, say to 95 degs., at ten inches from the glass, it would be considerably increased, say 10 degs.; while, at a similar distance, or one foot lower, it will be found to have increased very little. Consequently, by the use of the moveable trellis, we should have an opportunity of lowering the vine, and thereby placing it in a more temperate atmosphere, of from 5 to 6, 7, or 8 degrees.—J. SMITH.—*Trans. Hort. Soc.*

FLORICULTURAL INTELLIGENCE.

NEW AND RARE PLANTS, Figured in the Botanical Periodicals for September.

CLASS I.—DICOTYLEDONOUS PLANTS OR EXOGENES.

POLEMONIACEÆ.—The Greek Valerian Tribe.

COLLO'MIA LATERI'TIA, Red flowered *Collomia*. A little hardy annual, bearing some resemblance to the *C. linearis*, but with darker flowers. It is a native of Chili, where it was introduced by Mr. Hugh Cuming. It has diminutive flowers of no particular beauty, its seeds ripen freely and come up spontaneously in the open border.—*Sw. Fl. Gard.*

LEGUMIN'OSA.—The Pea Tribe.

ASTRA'GALUS PROCUM'BENS,—Procumbent Milk Vetch. A plant of rather delicate appearance, raised by Mr. Cameron, from Chilian seeds. It is found in the plains of Concepcion, Valparaiso, and Coquimbo, and will probably always require the protection of a green-house, or of a frame.—*Bot. Mag.*

ASTRAGA'LUS VESICA'RIVS,—Bladdered Milk Vetch. This very handsome and highly desirable species of *Astragalus* is a native of the barren wastes, in the south of France and Russia, as well as of Hungary, and is perfectly hardy, flowering in May. Although, as cultivated in the Glasgow Botanic Garden from seeds communicated by Mr. Otto of Berlin, the flowers are always of a rich purple colour, becoming darker and almost blue in age, yet they appear, in a wild state, to be sometimes cream-coloured or white.—*Bot. Mag.*

ASCLEPIADEÆ

CEROPE'GIA WIGHTII.—Dr. Wight's Ceropegia. This very distinct species of Ceropegia flowered this summer (1833) in the Edinburgh Botanic Garden, where it had been received from the East Indies, under the name of *C. buibosa*, It agrees with that species in having a tuberous root, a twining succulent stem, as well as in the leaves, and in the form of the corolla. but it is at once distinguished by the corolla.—*Bot. Mag.* This plant is more remarkable as a botanical curiosity than for its beauty. The flowers are green and flesh-coloured.

ERICEÆ.—The Heath Tribe.

ERI'CA CANTHARÆFORMIS. A native of the Cape of Good Hope, introduced not long ago: it is of upright growth, and flowers in May and June. The flowers are white, and in shape resemble a little can. It requires the usual treatment of an airy green-house, and should be potted in sandy peat earth. It is propagated by cuttings.—*Bot. Cab.*

OXALIDEÆ.—The Wood Sorrel Tribe.

OXALIS BRASILIENSIS. This is a purple flowering species, a native of Brazil, roots of which were received by Messrs. Loddiges, in 1829, from Mr. Warre, who collected them himself. It flowered in May, 1833, and is a very pleasing plant. It may be kept very well in the green-house, potted with light loam and peat; and can be readily increased by offsets.—*Bot. Cab.*

SOLANEÆ.—The Nightshade Tribe.

SOLANUM LIGUSTRINUM, Privet-leaved Nightshade. This is a native of Chili. Messrs. Loddiges received seeds of it from Mr. Cuming, in 1831, and it flowered in May, 1833; it is a free growing shrubby plant, with slender branches, and may be easily preserved in a green-house. The flowers are purple. It will propagate readily by cuttings, which should be potted in rich loamy soil.—*Bot. Cab.*

PYMELE'Æ.—The Mezereum Tribe.

PYMELE'A SYLVESTRIS. This is a native of New Holland, it has been lately raised by Mr. Knight; it flowers in May and June, and appears to be a small shrub with few branches. It requires the protection of an airy green-house, and will increase by cuttings or seeds, which appear likely to ripen in this country; the soil should be sandy peat.—(*Bot. Cab.*) The flowers are rose-coloured and white.

PIMELEA HISPIDA. This, like the preceding, was raised in 1830, by Mr. Knight; its growth and habit appear very similar, and it flowers in May and June. It is from New Holland, and must be preserved in a light airy green-house. It should be potted in sandy peat earth, and may be increased by cuttings or seeds.—*Bot. Cab.*

CLASS II.—MONOCOTYLEDONOUS PLANTS OR ENDOGENES.

ORCHIDEÆ.—The Orchis Tribe.

CIRRHÆA VIRIPURPUREA, Green and purple flowering Cirrhæe. This curious plant is a native of Brazil, and has been lately introduced. It flowered at Messrs. Loddiges', last May; the flowers open all at once, and continue for a considerable time. It requires the stove, and succeeds very well, potted in vegetable earth, with moss and fragments of broken pots, increasing occasionally by separating the bulbs.—*Bot. Cab.*

CATASETUM TRITIDUM, Trifid-lipped Catasetum. For this beautiful and most interesting species of Catasetum, the Glasgow Botanic Garden is indebted

to Mr. Lockhart, who sent the living plant from Trinidad. It produced its large spike of flowers in the month of May, (*Bot. Mag.*) It is a stove plant, and may be cultivated in decayed earth, and propagated by division. The flowers are green, marked with purplish brown.

IRIDEÆ.—The Iris Tribe.

IRIS HUNGARICA, Hungarian Iris. This species is quite hardy, and has lately been introduced from Hungary. It produces its dark purple flowers in the months of April and May, and is well worthy of a place in any garden. There is no difficulty of increasing it by dividing the roots. It will thrive in any good soil, either in a pot or in the open border.—*Bot. Cab.*

AMARYLLIDÆ.—The Narcissus Tribe.

ALSTROEMERIA AURANTIACA, Orange-flowered Alstroemeria. We fear this very showy plant is scarcely entitled to attention, in any other light than as a mere variation of *A. Simsii*. Introduced from Chili by Mr. Anderson, the indefatigable collector, who accompanied Captain King in his voyage of survey in South America. It requires the same treatment as *A. Simsii*, and appears to be quite as hardy as that species.—*Sw. Fl. Gard.*

CULTURE OF THE AURICULA.—Vegetable economy, as well as animal, are subject to certain laws of Nature, that cannot be transgressed with impunity, and our treatment of plants ought always to be conformable thereto. A plain and simple mode of culture, as regards all plants, provided they are found to thrive and flower well in the use of it, is always to be preferred, and ought to be pursued, as being the easiest, cheapest, and the best. Strong stimulative manures, however beneficial they may be for the time, in producing large flowers, and vivid colours, too frequently leave the plants in a state of exhaustion, if not of premature and gradual decay. Mix together one barrow of rich yellow loam, or fresh-dug earth, from some meadow, or pasture land, or common, with the turf well rotten; one barrow of leaf mould; one ditto of well decomposed horse or frame dung; one ditto of cow dung two years old at least; and one peck of river sand, not sea sand. This simple mixture may always be depended upon for keeping the plants healthy. To strong plants, intended for exhibition, add to the same compost as a stimulant, a barrowfull of well decayed night soil, with the application of liquid manure, once or twice before top dressing in February, and twice more in March, not oftener. A peck of sheep dung, with the same quantity of horse droppings, put into a large tub of water, stirred up frequently, and left to ferment a week or two before it is used, may be applied with good effect, and perfect safety. A portion of light sandy peat earth, generally to be found on the tops of barren heaths, or moors, though not easily obtained everywhere, may be added, as a safe and useful ingredient; particularly for plants kept in low and damp situations, where light potting and light compost are found to answer best. By way of change, make use of the following composition;—two barrows of Wanstead loam, with the turfy part decayed; one barrow of leaf mould, one barrow of cow dung; one barrow of old frame or horse dung; half a barrow of old night soil; half a barrow of sheep dung; and two pecks of river sand. And a top dressing of one quarter loam, and three quarters sheep and cow dung, rotted and mixed together in one heap; and manure water as before.

Winter.—In the three winter months, from the 21st. of November to the 21st. February, Auriculas do not require much of our care, beyond watering them occasionally, plucking off the dead leaves, and covering them with mats, or a little

coarse hay litter during severe weather; and this covering ought more particularly to be given them in February, because their trusses then begin to appear, which, if frozen hard, will shew the ill effects of it in the bloom. These want very little water in the winter, and seem to get through it best, when kept in December and January rather dry than otherwise. Early in February, if the weather happen to be mild and open, give them a day's gentle rain, or, at least, rain sufficient to reach their roots, at the bottom of the pots; and this may be repeated when necessary throughout the month. Now give them manured water twice, and do the same in March, allowing a week between each watering. About the middle of the month, or as soon afterwards as the weather permits, top dress with some of the best and richest compost; taking care in the first place to remove from the top of the pots as much of the earth as you can without injury to the roots. The liquid manure and the top dressing will add fresh life and vigour to the plants, and accelerate their growth. They now have occasion for all the air you can give them. If any plants require shifting into larger pots, this is the time for the operation.

March.—To ensure a good bloom, much depends upon the care taken of them in March.—Let them receive no check whatever, either from want of covering or want of water. Let the lights be off all day, if the weather be in any degree favourable; and let the plants receive all the soft and gentle rains that fall, until the pips open, but protect them from cold sleet and snow, and cutting winds. By the middle of March, the flower stalks will have shot up, and the flower buds will begin to grow: and as these are the tenderest parts, and most liable to injury from frost, which often prevails more or less by night, at this season of the year, it is highly necessary to give them additional covering, to prevent their being chilled and nipped by it. Neither expose them too hastily to the sun, if it should happen to shine, before the frost has disappeared; and let the same precaution be used in April. To prevent the stalks being drawn up and weakened, so that they cannot support the trusses, let them have all the air possible. Thus having nothing to retard or check their growth, they cannot fail to go on well, and produce large trusses of rich bloom.

April.—By the end of the first or second week in April, the flowers will begin to expand, and shew their colours; and then the lights must be kept on by day and night, to prevent their being washed by the rain, or tarnished by the sun, either of which would deaden their brilliancy, and spoil their beauty. Air must be given by raising the lights at the back of the frames; and mats must be thrown over them, to keep out the hot sun, during the middle part of the day. Let the frames be shut close in the evening, and a warm covering be continued a while longer, in case of frost. Besides, this is the time to thin out the crowded pips from the centre of the trusses, which will give more room to the rest to grow, to expand themselves, and to lie flat, and come more nearly of a size. When the plants are fully blown, let the best and strongest of them be taken out of the frames and be set on boards, sand, or coal ashes, behind a low fence, or private hedge, and covered with large hand glasses. Here they will remain cool, and shaded, and preserve their blossoms fresh for three weeks. Cover them with a mat at night. As soon as the flowers begin to fade, remove them to a north or north-east aspect, where they will have to remain till November, at which time you should be provided with a conveniency for placing them on a raised platform, and to shelter them from the sun and rain with boards or shutters, hung on hinges

to let up or down, as occasion requires. In June, pluck off the dying petals which if suffered to remain, are injurious to their forming the seed. Nip off also the whole of the pips of young plants, just above the pedicels, to strengthen and increase their growth. Persons who are careless about the seed, may treat them all in this way.

Potting.—As to the fittest time for shifting the plants into fresh compost, it matters very little, whether it be done in the middle of June, or two months later, provided a few days of clouded sky and moist atmosphere should occur. The plants, after flowering, relapse into inactivity, and grow very little during the hot summer months. If you pot early, you ought also to top dress the plants with fresh compost in September; because the mould in the pots, by that time must be greatly impoverished by watering. Remove all the large offsets from the plants, some time in March, because they grow quickest in the spring.—*Hogg's Supplement on Flor.*

GENERAL MANAGEMENT OF PLANTS UNDER GLASS. (*Continued from p. 422.*) Cuttings are slips cut from the mother plant for the purpose of setting, in order that they may make roots, and form young plants. A small house should be devoted to their propagation, but if this cannot be obtained, a frame may be used, situated so as only to have the morning sun; otherwise shading with mats will be necessary. Those requiring heat should be plunged in a bed of tan, or placed in a hot-bed. Cuttings of woody plants take root best in fine sand, for they strike more freely in it, and are safer to pot off after being rooted, since the sand shakes clean from their roots, and this is not the case when they have been planted in mould. But as some of the soft wooded kinds will not strike well in sand, they must be planted in mould. In making cuttings, no leaves should be taken off, or shortened, except in that part which is to be buried in the ground, where they should be cut off as close to the stem as possible. The more leaves there are on a cutting, the sooner it will take root, and the more shallow they are planted the better, but they must be well fastened in the ground. The pots in which they are planted should be well drained with sherds, and kept rather moist, but not too wet, and the hand or bell glasses with which they are covered should be taken off and wiped occasionally. When the cuttings are rooted, and have been potted off, they require to be placed in a frame for a few days and shaded; after this they should be hardened by degrees. When plants cannot be easily raised from cuttings or layers, budding, inarching, and grafting must be resorted to, on some other plant nearly related. To describe all the different methods of grafting, budding, inarching, and layering, would occupy considerable space, and would be of little service, since all practical men are acquainted with the most useful methods. In procuring loam and peat for potting plants, the top spit is always to be preferred, with the turf upon it, and as fresh as possible. Where peat cannot be had, decayed leaves or wood may be substituted. The lighter and more sandy loam is the better, as it will require less peat and sand to be mixed with it. A certain quantity of sand is always a proper ingredient in mould intended to be used in potting or shifting plants.—*Geo. Don.*

ARBORICULTURAL INTELLIGENCE.

QUALITY OF OAK TIMBER.—There are only two species of Oak that are considered natives of Great Britain and Ireland, the *Quercus pedunculata*, and *Q. sessiliflora*. The former is called by some writers *Q. robur*, and by others the latter is called by that name. To prevent mistakes, it will be better to adopt the name *Q. pedunculata*. This kind is easily known by the acorns having long stalks, and the leaves having very short footstalks, or in some specimens hardly any. In the *Q. sessiliflora*, the leaves have footstalks from a quarter to one inch in length, and the acorns sit close to the branch, having hardly any stalks. The *Q. pedunculata* contains a great quantity of the silver grain, which shews, when the wood is planed, what workmen call the flower in the wood. In consequence of this, the wood splits clean and easy, and is best adapted for split paling and laths. It is also a stiffer wood, and though it may be broken with a less weight than the *sessiliflora*, yet it requires a much greater weight to bend it, and is therefore, best calculated for beams, or to bear the greatest weight without bending. The *Q. sessiliflora* contains so small a portion of silver grain or flower, that wood of that kind from old buildings, has generally been mistaken for Sweet Chestnut (*Castanea Vesca*). This was the case with the roof of Westminster Hall, and many other old buildings, which favours the supposition, that some centuries ago the chief part of the natural woods were of that kind. At present, the greater part of the Oak grown in the South of England is the *Q. pedunculata*. Specimens procured from different parts of Yorkshire, and the County of Durham, have all been *Q. sessiliflora*, which is very scarce in the south. There are some trees of it at Renwood, the Earl of Mansfield's near Highgate, which is one of the oldest woods near London, and the greater part of the *sessiliflora* appear to be trees from old stools. *Q. sessiliflora* appears to grow equally well with *pedunculata*, it is a more handsome tree in the foliage, and from finding so much of it sound in old buildings, it may possibly be more durable. It bends from a weight much sooner than the *pedunculata*, but requires a much greater weight to break it; so that from its toughness, it is probably best calculated for ship timber. The old Sovereign of the Seas was broken up, after forty-seven years service, much longer than the general durability of ships, and as the wood of which the ship was built came from the north of England, it is very probable it was the *sessiliflora*. Turkey (*Q. Cerris*) is a native of the Levant; its introduction into England has been within the last century, therefore we have very few trees of large dimensions. It is much finer in grain than our British Oak, or foreign wainscot; it takes a better polish, and is more beautiful. It appears to be equally as strong and much the same in toughness as our native Oak. For all ornamental purposes, where the wood has to be polished, it is superior, and must be a profitable tree to plant, as it grows quicker than our common oaks, and will thrive rapidly in poor land. Oak timber has for a length of time been imported into this country from Holland, by the name of Dutch Wainscot, which is generally used for floors, doors, and furniture: it is more straight in its growth, tender, and more easy to work than British Oak. It does not require so much seasoning, and stands better without warping, but is not equal in strength or durability to British Oak. They are thought to be the same species as ours, but coming from a natural wood, and the trees growing close, may account for the

straightness of the wood, and for its being more tender than our Oak, which differences may partly be owing to the soil. There is no other Oak that appears to thrive in this country, or is likely to be worth cultivating for timber, except the White Oak (*Quercus Alba*) of North America. Of this there are not many large trees in England, but the young trees appear to grow well, particularly in peaty sand. The White Oak imported from America is heavier than British Oak; it appears to be as strong, and is more difficult to work. There are a great variety of Oaks in America, but all except the white oak appear to be of an inferior quality. As ornamental trees, many of the American kinds are beautiful in their foliage, and from the various and rich tints the leaves take in the autumn, they are a great ornament to landscape scenery, and ought to be planted as ornamental trees more than they have been, in parks and pleasure grounds.—W. ATKINSON, Esq.—*Trans. Hort. Soc.*

NATURAL HISTORY.

DISTINCTION BETWEEN PLANTS AND ANIMALS.—Plants and Animals are as like to each other as connecting links in the chain of creation can be; in fact, a vegetable is merely an animal wanting locomotion;—it takes in nourishment by the absorbents in the root, after the manner of an animal, with but a slight difference; the food has first to be prepared for it, in being reduced to a proper consistency by the teeth and digestion, when the nourishment from it is taken up by the absorbents. As a parallel to this, it is necessary to place the plant in a situation where it may find its food in proper consistency. Now if it should happen that the plant be placed where its food is too abundant, then it will be stimulated to grow to excess, or what in animals would be fat, and hence it will not be in a proper state to reproduce its kind. Precisely the same thing occurs with animals, at least we know it to be the case in man; and by parity of reasoning, we conclude it would be the case with other animals. S. D.—*Mag. Gard. and Bot.*

AGE OF PLANTS.—Some plants, such as the minute funguses termed mould, only live a few hours, or at most a few days. Mosses, for the most part, live only one season, as do the garden plants called annuals, which die of old age, as soon as they ripen their seeds. Some again, as the fox-glove and holly hock, live for two years, and are occasionally prolonged to three, if their flowering be prevented. Trees again, planted in a suitable soil and situation, live for centuries. Thus the Olive tree may live three hundred years, the Oak double that number; the Chesnut is said to have lasted for nine hundred and fifty years, the Dragon's Blood tree of Teneriffe may be two thousand years old, and Adamson mentions Banians six thousand years old. When the wood of the interior ceases to afford room, by the closeness of its texture, for the passage of the sap or pulp, or the formation of new vessels, it dies, and by all its moisture passing off into the younger wood, the fibres shrink, and are ultimately reduced to dust. The centre of the tree thus becomes dead, while the outer portion continues to live, and in this way, trees may exist many years before they perish.—*Mag. Gard. Bot.*

PART III.

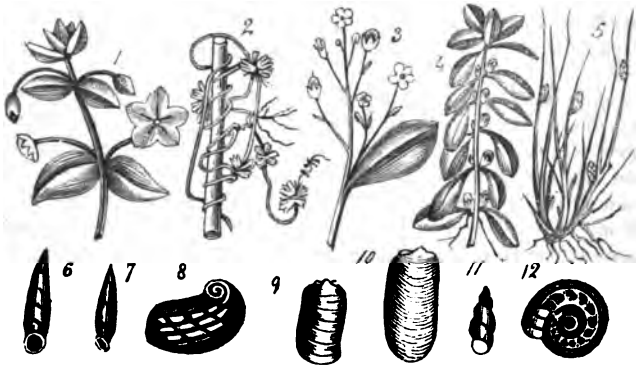
MISCELLANEOUS INTELLIGENCE.

I.—QUERIES AND ANSWERS.

WHAT PIT IS BEST ADAPTED FOR PRESERVING GERANIUMS, &c. DURING WINTER ?—Having derived several most useful hints from the questions and remarks in your magazine, I am induced to enquire what sort of pit is best adapted for preserving Geraniums, Verbenums, Salvias, Petunias, &c. &c. during the winter. I should wish the pit to answer for growing melons in summer, and know not whether M'Phail's plan, or a common cold frame in winter, which may be filled with stable dung in summer, will be most desirable. FLOS.

WHEN IS THE PROPER TIME TO REMOVE LAURELS, &c. ?—A correspondent in the last number of the Horticultural Register has kindly made known the proper season for transporting the Holly (*Ilex aquifolium*), and it would be equally useful and acceptable to several of your readers, to be informed of the proper time for removing the common broad-leaved laurel, the Portugal laurel, and the *Laurustinus*. A SUBSCRIBER.

The WOOD CUT which we were compelled to leave out last month, we now give below. The explanatory matter will be found at pages 427 to 430, in the September number.



WHAT IS THE MODE OF CULTIVATING THE *KENNEDIA RUBICUNDA* AND *THUNBURGIA ALATA* ?—If any of your numerous correspondents could furnish a few particulars relative to the culture of the *Kennedea rubicunda*, it would be a great advantage. The plant in question has been kept in a hot-house ever since it was raised from seed, in the spring of 1832; it has been very sickly and been always covered with moss on the surface of the pot, within a short space after it has been newly planted; it has produced a single flower twice during the past few months, and has ripened one seed. The owner of the plant wishes to know what soil it requires, if much water, whether a sunny or shady situation,—if able to bear the open ground in the summer, or likely to be invigorated by such a mode of treatment, and whether there is any better way of propagating it than by sowing seed in a hot-bed in the spring.

Respecting the *Thunbergia Alata*, a little information is much wanted ; it has been blooming very luxuriantly for many weeks, but now at length seems quite exhausted, and ready to die, none of its flowers have produced seed, and there seems no way of preserving a successor, unless it should put out again from the root, which gives no appearance whatever of vitality. While in vigour, could any of the runners have been taken off and potted with good effect ? or what means are usually resorted to, for keeping up a succession of these very beautiful plants ?

NANTO.

THE AUTHOR OF THE DOMESTIC GARDENER'S MANUAL TO VIGORNIENSIS,—When I last addressed Vigorniensis, I merely adverted to the quality and appearances of two varieties of Persian Melons, (Hort. Reg. Vol. 2, page 377.) I was not then in possession of the facts that have subsequently come under my immediate observation. Now, however, I can distinctly reply to his objection and queries, stated in page 202 of the same volume. There we read, “It is still however, in my opinion, a question, what is the *peculiar excellence of the upright system of training* ? and particularly, what is the advantage of planting in pots, when the same is more readily and perfectly answered by planting in the soil of the bed ?”

I shall not insist absolutely upon the superiority of pot planting, compared with that of the common hot-bed. Mr. Knight himself has said that the striped Housainea will succeed with the usual melon culture,—but that it will be always proper to support the fruit on a sort of little cradle. That melon is perhaps the hardest and most manageable of the Persian tribe ; but such is the delicacy of its rind, when compared with that of the common melon, that it will be prudent to keep it from pressure upon any hard substance. As to the superiority of the method of growing in pots, I can only state that in 1832, I produced one large melon weighing six pounds five ounces, and another of three pounds six ounces at the same time, upon one plant, growing in a common sea-kale pot inverted : but then, the roots penetrated into a bed of leaves, of a very genial temperature. (see my former papers on this Persian melon.) A gentleman in my immediate neighbourhood has, this year, grown the Housainea from seed produced by me. His gardener has every advantage of a fine, brick, pigeon-holed pit, and plenty of excellent stable dung. He has employed fresh earth, from a sheep walk, and has trained his melons in the usual manner. The fruit set admirably, and promised to prove a noble crop ; two only, however, came to perfection on his fine plant. One weighed four pounds two ounces, the other three pounds two ounces ; and the plant withered away. Hence, I conclude that if the Persian melons be grown in a house, in pots, plunged in a deep leaf-bed, and the stems be trained upwards towards the glass ; as much, or more fruit may be produced, with the concomitant advantages of increased length of stem and proportional vegetable vitality. The leaves thus situated may be examined with facility ; and red spiders, or other vermin harbouring on the underside, may be readily perceived and washed off. I had opportunity of inspecting the melons just referred to, during the whole period of their growth ; and therefore, know the progress they made. The two melons rested upon tiles : they approached maturity : the gardener on one occasion happened to lift up the fruit that he thought nearly ripe, and to his consternation, found the underside mutilated and full of holes. Woodlice (sow-bugs as they are here called,) had burrowed into the fruit, and severely injured it ; the other melon also was attacked. Both were then cut

and were found nearly, if not entirely ripe. I tasted one of them, and the flavour was exquisite; but it ran rapidly into the putrefactive fermentation, and much was lost. Were no other motive to be found for high training, than that of placing the melon on a cradle, where it could be seen and investigated in every part, and at all times with perfect convenience, it would amply suffice. That method which increases the vital power of the plant, places it within the ken and command of the cultivator, and preserves the fruit from pressure and molestation, must be the one to be preferred. I have seen and proved a variety of modes of culture, and am satisfied; and I trust the facts I have detailed will stimulate others to further exertions, and promote the extended growth of this exquisite tribe.

In my late notice to *Vigorniensis* on the culture of my potted vine, a misprint of a word has occurred, which must be corrected. In page 379, line 17, for "each was *sloped*," read, "*was stopped early*:" the sense will then be materially different.

MISTAKE IN THE ARTICLE, PAGE 308.—By referring to my statement, you will find that you have made a mistake in copying the article, page 308 of your interesting register, wherein you have mentioned the height of the trees when planted in 1805, *instead of the circumference at one foot from the ground in 1832*. The truth is, I have never planted trees above eighteen inches or two feet high.

JOHN HUGHES.

There were two measurements, *viz.* one foot from the ground, also the average of one foot to twenty feet.

II.—NOTICES AND ANTICIPATIONS.

FALL OF THE BRIGHTON ANTHEUM.—The Anthemum at Brighton fell on Friday, August 30th, with a tremendous crash; the noise it made resembled the distant rumbling of thunder; but happily its destruction was not attended with loss of life. This immense edifice was commenced about twelve months since, under the superintendence of an eminent botanist, Mr. Phillips, whose knowledge of horticulture is very extensive. The building was composed of iron, weighing between four and five hundred tons, and it formed the largest dome ever constructed, exceeding in size that of St. Peter's at Rome, by upwards of 8,000 superficial feet. The glazing, which was to have been commenced on Monday, would have occupied a long time, nearly two acres of glass would have been required to cover the dome. The planting had been commenced, some of the choicest plants had been collected, and a great many eminent persons were contributors, including the Duke of Devonshire, &c. The work had progressed rapidly, and the building promised to stand a monument of architectural beauty. A great portion of the scaffolding had been removed, and, on Friday afternoon, the whole of it was taken down, and every thing appeared firm. In an hour or two afterwards, however, a portion of the iron work was heard to crack, and the workmen having timely notice of the same, removed from the premises. The cracking continued for some time, and then fears were entertained for its safety. The principal gardener had scarcely left the interior, when it came tumbling down with an awful crash, immense ribs of iron snapping asunder in ten thousand pieces; and a great part of it, from the height it fell, was buried several feet deep in the earth.—*Brighton Gazette*.

Since the above account was received we have seen Mr. Phillips, who has informed us, that the Antheum will be instantly rebuilt. It is highly gratifying to learn, that so gigantic an undertaking is not to be abandoned. For from the known talents of the architect, Decimus Burton Esq, who designed the Colosseum, and now engages to rebuild the Antheum, no doubt can be entertained of the substantial completion of the edifice, and we trust Mr. Phillips will meet with the most liberal encouragement.

J. P.

REBUILDING OF THE ANTHEUM.—Henry Phillips avails himself of the opportunity of thus publicly returning thanks to those numerous friends throughout the kingdom who have so feelingly expressed their condolence at his late calamity. The misfortune was occasioned by the misconduct of one of the foremen of the works, who, unknown to his employer, took upon himself to remove the supports, before the proper ties were added, which would have prevented the possibility of the fall of the edifice. H. P. has, however, the pleasure to add, that having received the most liberal offers of support, and the highest patronage of the country, he has determined on rebuilding the Antheum, the management of which he has placed in the hands of Decimus Burton, Esq. as architect, assisted by the most eminent engineer of the day. It will be readily believed, that the fall has been an immense loss to the proprietor, and unless he had received the most liberal encouragement, the re-erection of it would have been out of the question.

To meet the extra contingencies, independent of the main cost of re-erecting it, the following plan has been suggested as most likely to assist the proprietor in completing this national object, in the unique manner it was originally designed:—"That one hundred silver tickets, of £50 each, be issued, which will entitle the holders to a free admission, in addition to interest thereon, at 5 per cent. per annum, which tickets may be subdivided. The holder of each half ticket being entitled to a free admission for two persons in lieu of interest. Persons residing ten miles from Brighton, may make their tickets transferable, by giving notice of the same in writing."—HENRY PHILLIPS.

III.—NATURALIST'S CALENDAR,

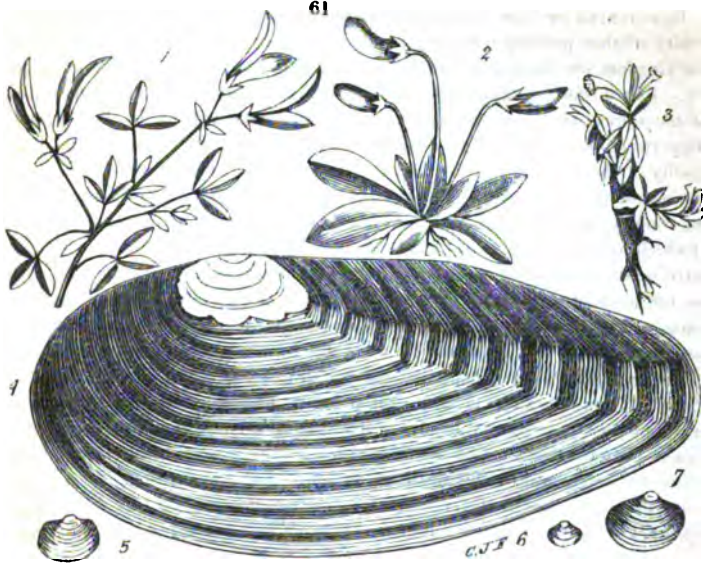
OR OBSERVATIONS ON NATURE, FOR OCTOBER.

AN excellent perennial pasture plant, the Bird's-foot Trefoil, *Lotus corniculatus*, (Fig. 61, 1) abounds in all our fields and pastures; it varies much in size, in the direction of the stems, and the greater or less hairiness of the leaves, which are obovate and entire; the flowers are yellow, and the pods long.

In our marshes and boggy grounds, the *Pinguicula vulgaris*, or Common Butterwort, (2) may be found plentifully, both in the north of England and in Scotland; the flowers are of a purple colour. In watery places, the Water-Blinks, or Water-Chickweed (*Montia fontana*, 3) may be gathered. This is a little succulent Annual plant, with prostrate rooting stems, from two to four inches long, with minute greenish white flowers.

MOLLUSCOUS ANIMALS.—A large bivalve shell, that of the *Anodon Cygneus*, (4) may be found in rivers; it grows nearly three inches long, and above six wide, it is either green, pale brown or fawn colour. The *Cyclas calyculata* (5)

may be found occasionally in lakes and still waters, but it is far from common. This shell is about one-third of an inch broad, and is of a flat form, of a bluish white colour, and nearly smooth. A more common one is found in most streams and brooks, the *Cyclas pusilla*; (6) this shell is about one-eighth of an inch in diameter, of a brownish or bluish horn colour. The *Cyclas lacustris* bears some resemblance to the *C. calyculata*, but is thicker, and of a dark grey colour; it is found in similar situations to the *calyculata*, and is nearly as rare.



BIRDS.—The common wagtail, in general, seeks a quiet cottage or other retired place in which to build, and shuns all noise. But some years ago, a pair of these birds built their nest between the roofing of Mr. Becknell's school-room, at Tooting, in Surrey. On one side of the building there was a pond partitioned off from the play-ground, and thither the birds frequently resorted, quite regardless of the gambols and shouts of the boys at play. In this situation, no doubt, they would have remained, had not one of the boys, by means of a ladder and a net, entrapped the old birds whilst flying out between the tiles.—*Field Nat. Mag.*

THE NIGHTINGALE.—A contributor to the *Field Naturalist Magazine* says, "The Nightingale has no note of its own, except the first short whistle in commencing its rich and varied song, and the succeeding—jug, jug—as if to prepare itself for its elaborate and rich song. It is then distinctly and literally, a *mocking bird*, and pours out in richer, louder, and more mellow tones, the notes of other singing birds, including those of the thrush, blackbird, yellow hammer, lark, red-breast, wren, &c. until it is tired. The Nightingale never sings without resting its breast upon a twig while it sings, as if to assist it in exerting all its powers; and for this reason, it always lays a twig across its nest, thus teaching its young to resort to the same assistance in their future song.

THE CUCKOO.—No doubt the Cuckoo comes to England *solely* to breed, be.

cause it is believed to migrate to the south, and, therefore, cannot visit us for the sake of *climate*, since it comes in the most temperate part of the year, and leaves us when the hot weather commences. It breeds almost immediately upon its arrival, and leaves us as soon as it has performed the necessary duties for propagating the species.—*Field Nat. Mag.*

DIFFUSION OF SEEDS.—The economy of Providence in distributing seeds may be remarked in those of the Dandelion, (*Leontodon Taraxacum*), which are every where to be seen during summer, floating about on the air, supported by its feathering down. It is not to be supposed that half of these seeds ever fall upon spots favourable to germination; but when so great a number of them, and of their congeners of the class Syngenesia, are scattered about by the winds, there is not merely a chance but a certainty, that some of them will fall on spots where they had not previously existed, or where vegetation was scanty; on the tops of walls for instance, where a thin stratum of soil is formed by the decay of the winter crop of mosses. The process during the formation of such soil is exceedingly interesting, and may even in cities be observed on a small scale, on brick or stone walls. There is first the green incrustation, called by Linnæus. *Bysus*, but recently proved to be primary germination of several mosses, such as *Polytricha* and *Tortula*. When this decays, a very thin layer of vegetable earth is formed, which affords a scanty support for the roots of the next year's crop of mosses: and in process of time, soil is formed of sufficient depth for *Drabaverna*, and other wall plants.—*Mag. Gard. Bot.*

GROWTH OF PLANTS.—The several opinions prevailing on this subject may be referred to three general heads. *First.*—That growth in diameter is carried on by the annual change of the inner bark into pulp wood, and of pulp wood into hard wood, and by the successive renewal of the inner bark. *Secondly.*—That the successive formation of the layers of wood is produced by the evolving of buds. And *Thirdly*, That the annual formation of woody layers is owing to the pulp, which, every year, forms, at one and the same time, a new layer of pulp wood, and a new layer of inner bark.—**RENNIE.**

AGLOSSA PINGUALIS, or Tabby Moth. The larvæ of this moth, unlike most others, feed upon animal substances, such as butter and bacon, and are stated by Linnæus to inhabit even the human stomach, being the most dangerous of worms, possibly from a capability of perforating the intestines. Although many years have elapsed since Linnæus made this remark, no one has either confirmed or contradicted it!

THE GREEN-ROSE CHAFFER, (*Cetonia aurita*).—These beetles do not attack the essential parts of flowers, but only suck the honey at the bottom of the corolla. The larvæ are blind, and roll themselves on their backs, contracting the annulations of their body, to move forward instead of walking. They are two or three years in arriving at their perfect state.

THE FOREST FLY, (*Hippobosca equina*).—These flies run swiftly, and like a crab, either sideways or backwards: they are very tenacious of life, and live principally upon horses, attracting themselves to the belly. It is remarked by Latteille, that the ass fears them the most; and that horses suffer very little from them, since probably after the first irritation they cause little pain, otherwise horses could not live in the forests in the summer.—*Curtis' Entomology.*

The Amount of Sunshine during the month of August.

August.	Morning.	Evening.	Total.	Average Daily.
	82 hours.	64 hours.	146 hours.	4 hours, 42 min. 15 sec.

IV.—SOCIETIES.

SHEFFIELD HORTICULTURAL SOCIETY.

ON Wednesday the 25th of September, the last exhibition of the Sheffield Horticultural Society was held in the Music-Hall at that place, in the presence of the most numerous and respectable company ever witnessed on a similar occasion. The floral part of the show consisted of Dahlias, and a more extensive or superb collection has not, we believe, been brought together in any part of the country. The principal contributors were amateurs, resident in the town and neighbourhood, by whom most of the prizes were carried off. The greater part of the fruit and vegetables were from the gardens and conservatories of His Grace the Duke of Devonshire, the Earl of Surrey, Earl Fitzwilliam, Lord Wharnccliffe, and of the neighbouring gentry. The greatest rarity in fruits was an Ispahan melon from Chatsworth, the flavour of which was most delicious. The pines and grapes were particularly fine, and so were the chief part of the vegetables, especially the cucumbers, endive, celery, &c. There was a good collection of choice greenhouse plants, but we have not space for particulars. The exhibition was a great improvement upon those of past years, and considering that the formation of the Society took place so recently as 1830, we were both surprized and gratified in witnessing its marked success. It is now able to compete with the first societies of a similar kind in the Kingdom, and we confidently anticipate a growing prosperity. The scene on entering the Hall was, on this occasion, most splendid and attractive, the general arrangement of the different articles was excellent, and the elegantly attired company were delighted by the presence of the West-Riding Yeomanry Band, in full uniform, playing favourite airs. After closing the exhibition, about eighty gentlemen, members and friends of the society, dined together at the Tontine Inn, under the presidency of the Right Hon. Lord Wharnccliffe, who intimated that His Grace the Duke of Devonshire would have been present at the show, if not at the dinner, had his health permitted. The absence of Earl Fitzwilliam was occasioned by his having to preside over the meeting of a similar institution. Lord Wharnccliffe was supported by Jno. Parker, Esq. M. P. and Dr. Younge, as Vice-Presidents. Amongst the company we observed, in addition to those already mentioned, the Hon. J. S. Wortley, H. Gally Knight, Esq. Dr. Corbett, Dr. Milner, Col. Fenton, the Master Cutler, M. Ellison, Esq. and B. Hounsfield, Esq. The company did not separate until a late hour, and a more agreeable meeting we scarcely ever witnessed. We regret that our limits forbid us to give more than this brief and imperfect sketch of so interesting an event.

V.—MONTHLY HORTICULTURAL CALENDAR.

FOR OCTOBER.

FRUIT DEPARTMENT.

Apples should now be gathered in fine days, and carefully placed in the fruit room, packed in earthen jars and placed in a dry cellar, or pitted after the manner of potatoes.

Cherry Trees, which have been infested during the summer with the black louse, *Aphis Cerasi*, should have a good syringing with a mixture of good soap-suds and tobacco-water, or the recipe recommended, p. 264, should be adopted.

Fig Trees.—About the end of the month, *Fig trees*, on the open walls, may be pruned and nailed. Cut away all those old shoots that have gained the top of the wall, on purpose to give place to the last year's shoots that are in the rear.

Gooseberry and Currant Trees may be pruned when the leaves have fallen. Leave a good supply of young wood from the bottom.

Grapes.—Vines in pots being brought into the Vinery, will ripen their fruit in February. Those forced early, if the wood be ripe, should be exposed to the open air, to prepare them for forcing again.

Peach and Nectarine Trees on the walls will begin to cast their leaves towards the end, and it will be an advantage slightly to brush them upwards with a small birch or ling wisk, to clear the leaves from the branches. Keep them close nailed to the wall this month, or they will be liable to be broken by the wind. If the wood be unripe, and the walls against which they are trained be flued, put in some fire to ripen the wood off, for on this depends the future crop.

Planting.—Fruit Trees of all descriptions should be planted as early in the month as is convenient, to establish them in their new situations before severe weather comes. After all the leaves have fallen, planting may cease until early in the spring.

Raspberries.—Make new plantations of raspberries upon prepared ground, see page 365. Towards the end, manure the old stools. Pot a quantity for forcing, page 396.

Strawberries, intended for forcing, should stand in a south aspect, if convenient. New beds may still be made, but it is better not to do this later than September; for when the plants are small and newly planted, the frost generally draws them out of the ground again.

FLOWER DEPARTMENT.

Auriculas should now be placed in frames or pit, p. 2, to stand through the winter.

Camellias must be brought into a greenhouse or frame, where they should be kept cool till the blooming season.

Carnation layers must be protected from heavy rains, frosts, and cutting winds.

Chrysanthemums, in pots, should be removed into the greenhouse. Give abundance of air to keep them from drawing.

Calceolarias, cut down as recommended, page 267, will come beautifully into flower. Keep them in a cool, airy part of the greenhouse.

Cyclamen persicum.—About the middle of the month take up the roots from the borders, and repot them; then plunge them in coal ashes in a cold frame, page 213.

Dahlia.—Lay about four inches thickness of rotten bark, or leaf-mould, over the roots, two feet round the stem of each plant, to prevent the crowns from being damaged by sudden frosts, and by the end of the month they will probably require to be taken up.

Greenhouse Plants will require taking in, and the sooner this is done the better, or they will be affected by the cold or frosty nights.

Forcing.—Plants intended for forcing must now be taken up, as *Rhododendrons*, *Pinks*, *Carnations*, &c. see page 211.

Mignonette in pots, to stand the winter, must be sheltered from heavy rains and frost, but let it have as much air as possible.

Hyacinths may be planted in beds in a light dry soil, in rows 18 inches apart, and 6 inches from root to root in the row; or they may be planted in 48-sized pots, in a light rich loam.—They do equally well, if not put in till November.

Roses in pots for forcing, if placed in the forcing house, produce flowers about Christmas.

Isotoma axillaris, and other handsome annuals, may still be sown in pots to flower in the following May and June, p. 112.

Cactuses, placed out of doors in June, must be taken into the greenhouse without delay, if not attended to last month, p. 161.

Ten-week Stocks, sown last month, must be preserved from rains and frost, but they must be as much exposed as possible.

Primula prænimens (sinensis Linol.) Cuttings of this plant may be put in the beginning of the month, p. 164.

Tyridia patonia, growing in the borders, should be taken up.

Tulips.—At the end of the month, or beginning of November, tulips should be planted. This is also the usual time for sowing the seeds.

VEGETABLE DEPARTMENT.

Cabbages for spring crops, should be planted. Prick out a bed, to fill up with in the spring, or to plant for a second crop.

Broccoli.—The Green and Purple Cape, Grange's Early White, Early Sprouting Purple, and Impregnated Early White, will continue in use, if the weather be favourable, from this time to Christmas. The Tall Large-headed Purple, the Portsmouth, the Sulphur-coloured, the Spring White, the Dwarf Purple, and the Siberian, should be taken up, about the end of this month or beginning of next, disturbing the roots as little as possible. Dig a trench, and lay them in a sloping direction, about 18 inches apart, with their heads towards the north, and only a few inches above the ground. Cover in the trench, and open another, laying the heads of the next plants over the roots of the first row, and so proceed until the whole are laid down. The crowns of the plants thus lying low, are soon covered with the snow, and preserved from the severity of the frosts.

Beet-root should be taken up and preserved in a cellar or shed.

Carrots, for winter use, should be taken up, and preserved in the same manner as beet-root.

Cauliflowers should be planted on a south aspect, under hand-glasses, in frames, and close under a south wall. Let some be potted in sixty-sized pots, and sheltered in a frame, to turn out in spring for the first crop.

Lettuces, to stand the winter, should be planted close under a south wall, and some in frames, lest those under the walls should be destroyed.

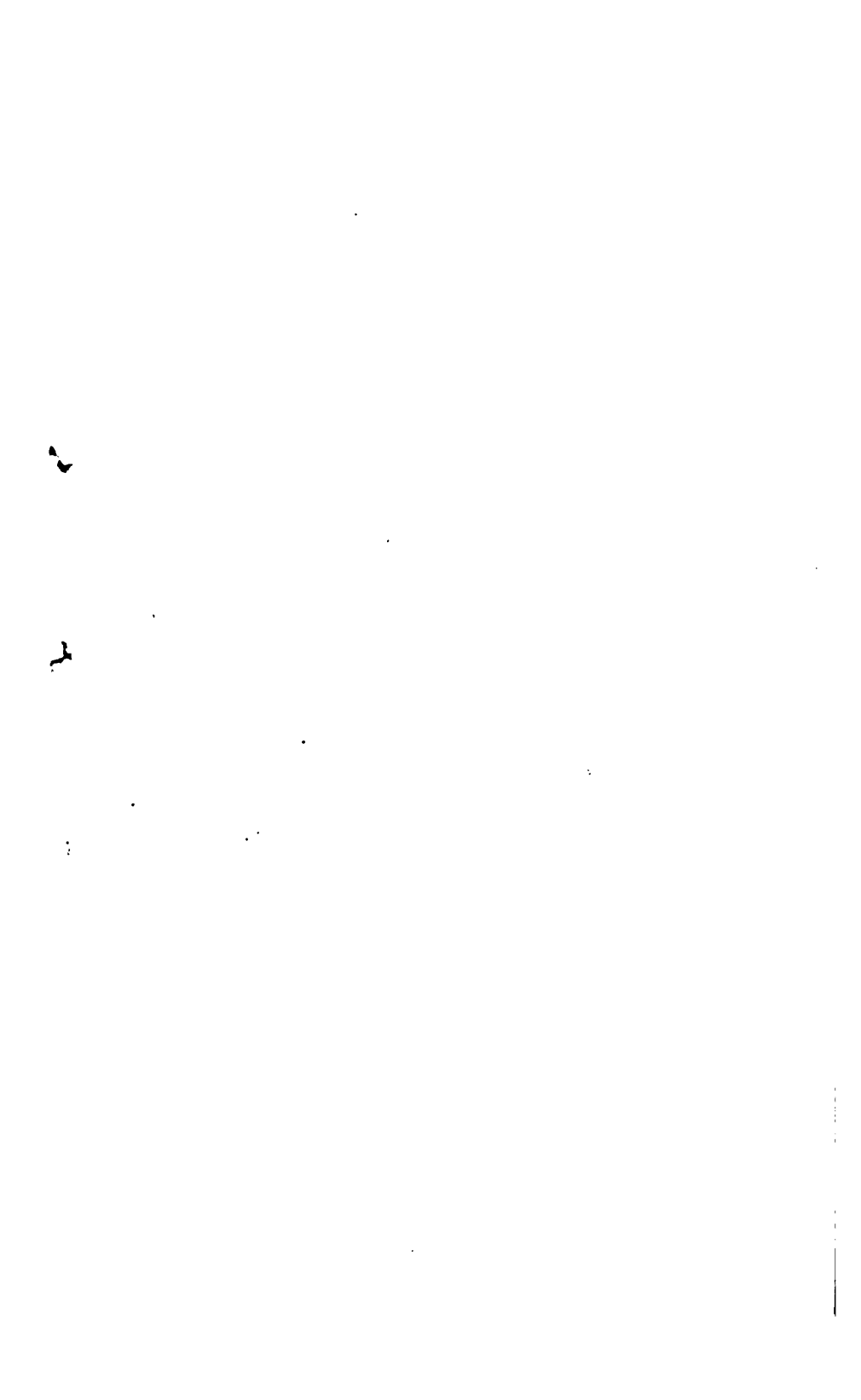
Herbs for forcing should be potted as mint, tarragon, &c.

Onions must be housed without delay, if this were not done last month.

Asparagus beds may receive a top-dressing towards the end of the present or beginning of next month.

Potatoes must be taken up, or they will be injured by the frost.

Radishes sown on an old hot-bed will come into use about Christmas.





~~GEORGINA~~
Salpiglossis integrifolia

THE HORTICULTURAL REGISTER.

NOVEMBER 1ST, 1833.

PART I.

ORIGINAL COMMUNICATIONS.

HORTICULTURE.

ARTICLE I.—ON THE CULTURE OF PEARS,

With some Remarks on their Natural History and Introduction, together with a selection for small Gardens in different parts of the Country.

BY JOSEPH FAXTON, F. L. S. H. S.

THE pear-tree, in its wild state, grows abundantly in France and Germany, and occasionally in England; the accounts of its culture are of great antiquity. The earliest writers mention it as growing abundantly in Syria, Egypt, and Greece; and it appears to have been brought from these places into Italy, about the time that Sylla made himself master of the latter country. Yet there is no doubt that the Romans had several kinds of this fruit before that period. It is uncertain when the pear was first cultivated in this country, but it may be presumed that the Romans did not neglect its propagation when they were masters of Britain. Generally speaking, pears are productive of flatulency, and are therefore improper for weak stomachs; the best are those which are quite ripe, and have a sweet juice, for then they are seldom noxious, unless eaten to excess.* A very excellent liquor called *perry* is made from the fermented juice after the manner of cider, and as cider may be made of the juice of the leaves, the same mode has been suggested for *perry*.

* Phillip's History of Fruits.

Whether this can be effected or not, we are unable to say, but probably it would be of a very inferior quality. On the continent, a very rich syrup is made from them, which is as thick as molasses, but of a much pleasanter taste. The pears are boiled over the fire, until the pulp and skins have separated from the juice, which, after being strained, is boiled until it becomes of a proper consistence. It is used in the same way, and for the same purposes as molasses, or treacle, which it greatly resembles both in colour and sweetness. It is far preferable for making gingerbread, and many other kinds of pastry. As an ornamental tree, the pear presents a great variety of shapes, and has a good appearance in landscape. The wood is smooth, light and compact. Turners use it to make picture-frames, measuring-rules, carpenters' tools, and for a variety of other purposes. It is said that the Persians make spoons of it, which they use at their meals instead of gold and silver.

Propagation.—The usual modes of propagation are by budding and grafting, either on the common pear stock or the Quince. By an improper selection of stocks, many fruits are rendered worthless. The pear stock is much used for all such varieties as are intended for orchard planting, or for open standards, and it is by some persons considered preferable for training against the wall, where durability is required. These stocks are raised from pips, and may be worked as soon as they are of sufficient strength. Budding for standards is superior to grafting, and for the system, see page 259, but dwarfs are better grafted, p. 258. Pears are sometimes grafted on the mountain-ash, service-tree, and white-thorn, all of which will grow and thrive where pear-tree stocks will not; although these stocks are often very durable, yet the white-thorn sends up many suckers, nor do any of them produce so well as the quince. This last kind of stock is without exception the very best for dwarfs; it has long been an old and good custom to graft the best kinds upon it, both for wall-trees and espaliers; for although, in some cases, they may not be so durable as pear stocks, yet they are so well adapted for stiff clayey, loamy, and deep rich soils, that the branches shoot freely, though they are not so strong and lofty as on the pear stock, and where the extent of ground is limited, and variety is required, a double quantity of trees may be grown. The fruit is generally very excellent. If, however, the soil be light and dry, or has a gravelly bottom, pear stocks are preferable.

Planting.—In making borders for fruit-trees against walls, it is a pretty general custom to make them very deep, and very rich; and this often causes the plants to generate too much sap, thus bringing

on barrenness and disease; for in vegetables as in animals, a proper state of health is only maintained by a medium betwixt emptiness and repletion. For pears, however, the ground does not require so much preparation, provided the soil be not very strong; and if that be the case, add a portion of road scrapings, for stones are of great importance, when laid at the bottom of the borders, for fruit-trees. They not only prevent an accumulation of wet in very rainy weather, but, in times of drought, they retain a good portion of moisture to nourish the trees. October is the best time for planting, just before the leaves drop from the trees.

Pruning and Training.—Those intended for standards should be selected with good straight stems, having heads consisting of not more than four branches; they should not be headed down the first year, but in the second they may be partially cut in, particularly those which grow very spreading. In performing this operation, leave the branches about eight inches long; during pruning in the following years, thin out all superfluous and ill-placed shoots, this being all they will require.

Against Walls.—The usual, and indeed the best system of training pear-trees against walls is the horizontal. Various modes of pruning are adopted for the different varieties, because of their different habits of growth; and some sorts seldom or never make large trees, from their constant disposition to bear fruit. Others, for years, shew no disposition to bear fruit, but produce abundance of strong wood; some, indeed, produce a blossom-bud at the end of every young shoot, others bear blossom-buds after the manner of the peach; whilst others are so impatient of the use of the knife, that nature must be allowed to induce them to bear at all. The different varieties are also trained different ways, as the fan, horizontal, &c. &c. see Vol. 1, pages 482, 684, and 723. Another system is described in the Gardeners' Magazine, which appears to partake of both the fan and horizontal, but of which we are unable to speak from experience, having never seen it practiced. Pears trained on the *fan* system, usually become nearly barren in a few years; this is occasioned by the centre branches growing too strong and luxuriant, and as they speedily reach the top of the wall, it becomes necessary to shorten them. This operation induces them to throw out a deal of young wood, which so materially robs the side branches, that they become weak, and are incapable of bearing any quantity of fruit; besides, what they do bear is usually at the extremity of the branches, and of a very inferior quality. The best mode we have practiced, or seen practiced, is the *horizontal*, because the sap is equally distribu-

ted; but even upon this system, the trees are a long time before they fill the wall, and many sorts remain very unfruitful for years after they are planted, and then often bear but half a crop. In fact it may generally be noticed, that the centre of a full pear-tree, with a few exceptions, is nearly or totally devoid of blossom-spurs. The manner of cutting out every other branch of a full grown tree, within a few inches of the perpendicular stem, to produce young branches, has been attended with good success. In horizontal training, the branches may be trained at about ten inches or a foot apart, according to the habit of growth, size of fruit, &c. each particular sort may possess. In the summer pruning, the superfluous young shoots should be shortened to about two inches, leaving the leaders at their full length. In the autumn, the spurs which were cut back in summer will have produced a lateral from their extreme bud; you may then shorten the spur again below the point whence this lateral shoot starts, and also thin out the spurs to a proper distance. In winter pruning, always give preference to those fruit-bearing spurs which grow naturally, and cut away all artificial ones that may interfere with them. As the spurs produce fruit, keep them short by cutting off, in the winter pruning, that part which bore fruit the previous year to the next bud. By thus keeping the spurs short, and at a proper distance, they will not fail to produce fine fruit, whilst long spurs generally produce bad fruit of little or no flavour. Sometimes, after all a gardener's care, his trees are still unfruitful, because they grow too luxuriantly to form blossom-buds. In such cases, ringing is resorted to, but this is often without the desired effect, and hence many practical men are induced to adopt other means, such as tying the young branches down in summer, twisting and breaking the foreright shoots nearly through, to within five or six eyes of the bottom, and leaving the upper extremity suspended six or eight weeks, see Vol. 1, page 72. Some perform this operation in the autumn when the wood has become tough, and the sap has ceased to run; and others at the time of summer pruning. Both these latter systems have a very unsightly appearance, but they have been found to answer where ringing failed.

In training *en pyramid* or *en Quenouille*, the young growing shoots are bent down about August, and tied, in a drooping manner, with string or bass matting. At the winter pruning, these strings are taken off, and every shoot is shortened according to its strength, the perpendicular stem being trained up to the height which is thought most convenient; but as training will be further treated upon shortly, and be illustrated by engravings, we forbear for the present saying any more on the subject.

Choice of Sorts.—It is necessary that some judgement be formed, as to the choice of sorts, by the situation in which they are intended to be grown. Some sorts, when in blossom, are entirely destitute of leaves; and this would be a great disadvantage in cold northern counties, for the blossoms would be more liable to be destroyed by frost. Others are much in leaf when they blossom, and appear to be formed by nature for cold situations. The following are a selection of those which may be considered the very best, calculated for either the northern or southern counties.

SUMMER DESSERT PEARS.—*Standards.*

Ambrosia.	Citron des Carmes.	White Doyenne.
Valée Franche.	Rousselet de Rheims.	Passans de Portugal.
	<i>Requiring a Wall.</i>	
Jargonelle.	St. Germain de Martin.	Seckle.

AUTUMN DESSERT PEARS.—*Standards.*

Buerré Diel	Boncretien Fondante.	Thompson's.
Marie Louisa.	Beurré de Capiaumont.	Glout Morceau.
	<i>Requiring a Wall.</i>	
Duchess d'Angoulême.	Napoleon.	Brown Buerré.

WINTER DESSERT PEARS.—*Standards.*

Fondante du Bois.	Swan's Egg.	Ne Plus Meuris.
Forelle.	Nutmeg.	Whitfield.
	<i>Requiring a Wall.</i>	
Winter Neilis.	Chaumontelle.	Passe Colmar.
Buerré d'Aremberg.	Easter Buerré.	Buerré Rance.

STEWING PEARS FOR KITCHEN USE.—*Standards.*

Bequêsne Musqué.	Chaptal.	Bezi d' Hery.
Double de Guerre, and Rousselet de Rheims, for drying.		

Nearly all of these sorts may be obtained of Messrs. Ronalds, of Brentford, or Mr. Malcolm, of Kensington, and probably many of them in the country nurseries.

It sometimes occurs, that pear-trees when brought into a perfectly vigorous state, blossoming every year abundantly, they will still set no fruit. This may arise from some deficiency in the parts of fructification, and may be remedied by sticking a few flowering branches of another sort, in different parts of the trees, or by training the branches of other pear-trees in blossom growing contiguous amongst the branches of the barren ones.

Gathering and Keeping.—All the summer pears are of short duration, seldom continuing many days after becoming ripe. Their rotting may be greatly retarded by gathering them before they are

thoroughly ripe. Indeed we have now, October 5th, some fruit of the St. Germain de Martin quite sound, although they were perfectly ripe more than a month ago. As soon as the winter pears begin to change colour, take them carefully from the tree without bruising them, and spread them out of doors on a mat, in a situation where they will receive the full force of the sun. Allow them to lie in the sun for two or three days, taking care to remove them into a dry place at night. This will absorb the superabundant moisture, and usually has a much better effect than packing them up directly. Though laying them in a heap to sweat was much practised formerly, it is found to do them material injury. With regard to stowing them away for winter, many methods are practised; the usual method of laying them upon straw is almost wholly discontinued, they are found to do exceedingly well when laid on the naked boards of the shelves. Light and air appear to have a good effect upon them; we recommend that the pears intended for keeping lie a fortnight or three weeks on these shelves, previous to being packed up for winter. When they have remained about three weeks, select such as are not bruised, and pack them in boxes, jars, or baskets. Mr. Lindley recommends that the boxes be filled with fine sand, to prevent the fruit touching each other, this sand being well dried either in an oven or on a flue, previous to being used. This system appears to answer well for preserving them plump and fine, but the flavour is often inferior to those packed in fern. If this be well dried, and the fruit be laid carefully in the baskets, with plenty of fern betwixt them, they will preserve both a good plumpness and excellent flavour. These jars, boxes, or baskets must be placed in a perfectly dry place, where they will not be affected by the changes of the atmosphere, and the fruit will keep long without suffering injury.

Mode of Drawing the Fruit.—The easiest method of taking the shape and size of either a pear or an apple, is to divide through the stalk, core and eye, particularly delineating the insertion of the stalk, and the shape of the top or calyx. The section is laid upon paper, and the shape traced by a pencil, which will give an exact figure.

INSECTS THAT INFEST PEAR-TREES.—This tree is often infested by a slimy insect, (Fig. 62, 1) which preys on the upper surface of the leaves, it emits a very disagreeable smell, which when the tree is much infested may be perceived at some distance. It is nearly the colour of a leech, but is much smaller. One of my young men brought me some of them a short time ago, which I enclosed in a little box, intending to watch them go through their transformation, but unfortunately they made their escape, previous to

entering the pupæ state. There appears little doubt that this is the identical insect mentioned by Messrs. Kirby and Spence, in their "Introduction to Entomology," Vol. 1, page 198; as the slugworm, which in America created so great an alarm amongst fruit growers, threatening the destruction of the pear, cherry, quince, and plum, and which is supposed to be a species of saw-fly, (*Tenthredo*.) Mr. Major supposes that there is a double brood of them in the year. We have just been examining our trees, but were unable to find any. These insects may be destroyed by dusting lime

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over the tree, on a fine morning, when the leaves are dry. The slimy matter which covers the insects will retain sufficient lime to destroy them. You may afterwards wash off the whole with a little water, by means of an engine or syringe. The blossoms of our pear-trees are often rendered abortive by the grub of a weevil beetle, supposed by Messrs. Kirby and Spence to be the *Polydrusus oblongus*. There are also various sorts of caterpillars, most of which infest the apple-trees, and may be treated as recommended in the calendars for July and August, pages 335 and 383. There are, however, two caterpillars, (2, and 3) which seem exclusively confined to the pear, and are seldom found till the end of September, or beginning of October. They both form webs, and very dexterously make their escape to the ground, on the leaf being touched. Figure 2 has a black head and tail, its body is brown, and the annulations are something darker than the other parts of the body; fig. 3, is considerably larger than the last, with a black head, the groundwork of the body being cream coloured; it has three longitudinal stripes of a greenish brown, extending from head to tail, with the annulations or rings of the same colour. They may be easily destroyed by a solution of lime drawn off perfectly clear, and applied with an engine; and in the course of a few days a good application of warm soap suds. There is also a kind of scale (4) prevalent upon the leaves in October, which may be destroyed by the same means. The little mining insect may also be destroyed, as stated page 335.

Of the summer Pears for dessert, we have figured the "Seckle" and the "ST. GERMAIN DE MARTIN." The proprietor of this last sort sent us a small box of the fruit, which on tasting he found to be very excellent, being melting, buttery, and very free from grit, with a flavour greatly resembling the Jargonelle. The trees bear abundantly, and we have no doubt the fruit will be found an excellent addition to our dessert pears, continuing in use much longer than the Jargonelle. The proprietor states, that he has but a limited

number of trees to sell, which may be had on application to Mr. Turner, Seedsman, Sheffield. See advertisement on the cover for August. This pear ripens about the end of August, and continues in use till November.

SECKLE.—This is called by some the New York red-cheek, by others the Syckle and red-cheeked Seckle. Early in 1819, a paper by Dr. Hosack of New York, was read before the Horticultural Society, in which this variety is spoken of in the following terms; The flesh is melting, juicy, and most exquisitely and delicately flavoured. The time of ripening is from the end of August to the middle of October. The tree is singularly vigorous and beautiful, of great regularity of growth and richness of foliage, very hardy, and possessing all the characteristics of a new variety. Much attention was naturally excited by this statement, and the trees which were liberally transmitted by Dr. Hosack, along with his description, were eagerly sought after. Subsequent experience in this country has amply confirmed the American account. It is found to exceed in excellence of flavour the very richest of our autumnal pears, possessing a high vinous aroma, which can scarcely be compared with any thing in fruits, unless with a concentration of the taste peculiar to the Swan's egg. The fault of the variety is, that it only remains in perfection for a few days; it speedily decays after being gathered. The period of ripening with us is usually the end of October.

ARTICLE II.—ON PROTECTING WALL-TREES FROM SPRING FROSTS.

BY MR. ROBERT MARNOCK, BREYTON-HALL, YORKSHIRE.

IN compliance with the request of your valuable correspondent, the Author of the Domestic Gardeners' Manual, Vol. 2, page 296, of the *Horticultural Register*, I beg to offer a few observations on the protecting of wall trees from Spring frost; and from the coincidence of that gentleman's ideas with those I have for some time entertained on the same subject I am the more readily induced to do so. Woollen netting, being an article in very general use for that purpose, will perhaps be thought to deserve the first consideration; and if elegance and neatness of appearance, were all that were requisite to form an efficient protection to these trees during the time they were in bloom, it would indeed be superior to any covering that I know. Its practical effects, however, prove that something more is required. For several years, previous to 1831, I witnessed the effect of this kind of covering with various degrees of success, some hundred yards of it being annually employed for protecting Peaches, Nectarines, Apricots, Cherries, &c.* during the time they were in flower. The

* The net used was half-inch heath.

net was secured to the coping of the wall, and brought down, at an angle of forty-five or fifty degrees, to within four or five feet of the ground, and supported upon rails, with their lower end fixed in the ground, and resting against the wall at the top. This covering was not removed during the day, but remained on during the whole time the trees were in bloom. In the spring of 1829, some Peach and Nectarine trees were left without protection, and also some parts of others, over which the netting did not extend. It was not expected that these unprotected trees would produce a regular crop of fruit, and this did not prove to be the case. The fruit set equally well as those under the netting, and the young shoots were evidently more vigorous. The following spring, my attention was again more particularly directed to the same subject, and several trees were purposely left unprotected in different parts of the garden, others were covered with branches of beech trees, which had retained their foliage through the winter, and the remainder were covered with netting in the usual way, with this difference, that at distances of about twenty yards, it was taken across and secured to the wall, and again returned and carried along at the same angle as before. The intention of thus bringing it in contact with the wall at these short distances, was to prevent as much as possible the currents of air created in the contracted space between the net and the wall, but notwithstanding this precaution, during the day, the temperature under the net was generally from three to five degrees lower than on the open wall, and in bright sun shine, accompanied with frosty wind, the difference sometimes amounted to ten degrees. It had, however, to a certain extent, the effect that was intended, but on comparing the trees with those which were wholly unprotected, I could not perceive the result to be in any respect different from what was noticed to have taken place the preceding year. At the time these coverings were removed, the trees which were protected with beech branches were more healthy, and the fruits more regular in size than either those under the netting or such as were fully exposed on the open wall, but the quantity of fruit which had set in each case was nearly alike.

The Author of the *Domestic Gardener's Manual* particularly alludes to two peach trees which missed bearing fruit in 1830, and seems to be of opinion that the use of woollen-netting was the cause of the failure. I have certainly no such charge to bring against it, but I am fully convinced, that beech branches, or indeed any loose spray that can be readily procured and easily fixed to the wall, will prove a more effectual protection to the tender blossom of these trees than woollen netting, or any similar screen, at least if applied in the

usual way. Although I have sufficient netting to cover the whole of the peach and nectarine trees, beech branches have been exclusively used for that purpose for the last three years: and notwithstanding the prevalence and severity of the frost during the last spring, while the trees were in flower, nearly every blossom set. None of the wall fires were lighted, though the thermometer indicated four and even five degrees of frost. Having recommended beech branches, it may be proper to observe, that all vegetable substances retaining moisture, being more rapid conductors of either heat or cold, than such as are dry, it will scarcely be necessary to say, that laurel and spruce branches in a green state, are the worst protectors that can be applied.

But in Horticulture, every thing beyond general principles must be left to the judgment of the practitioner, and practice and observation will supply the rest. Indeed the same degree of frost which a tree will resist without injury in one situation will often completely destroy it in another, and even in the same situation we not unfrequently find that a plant will one season endure a degree of frost that will kill it the next. It is, therefore, obvious, that any directions that can be given on this subject, must necessarily be of a very general nature.

These unembellished facts are the result of practical observations, and as the subject has of course frequently occupied the thinking moments of many of my own profession, to them at least there will appear nothing strange in my recommending beech branches for the protection of wall-tree blossom, while in my turn I shall feel equally unmoved at others who may even be still more strenuous in their recommendation of woollen net. This will ever be the case while cause and effect continue to be governed by circumstances.

ARTICLE III.

ON THE CULTURE OF VINES IN POTS.

BY MR. JOHN MEARNS,

Gardener to His Grace the Duke of Portland, Welbeck, Nottingham.

I AM pleased to see so liberal a spirit evinced, in imparting to the world the results of attentive observation and long practice, in papers on the cultivation of grapes, in pots; by which means upon a very small scale, and at a trifling expense, a succession of fine fruit can be preserved nearly the year round.

Any of what are termed Dutch pits, with convenience to manage them on the inside, are very suitable, and most economical for forcing

the grape in pots. For early forcing, I recommended such as Fig. 1 and 2; and for winter grapes fig. 3 and 4; or for either the hollow walled pits of T. A. Knight, Esq. figured in the Hort. Trans. Such pits as fig. 2, 3, and 6, can be cheaply constructed of posts and *slabs*, if a more substantial material be an object; and will be very sufficient for every purpose. Fig. 1 has a lining of hot dung in front, and under the stage fig. 2 has a lining all round the boarding. Fig. 3, has a flue inside, and is securely and neatly banked all round with a *turf wall*. Fig. 4 has a flue on the outside, upon the plan of Mr. Bucks pit, and for winter grapes this is a good method. Mr. Atkison has some good pits for the purpose in the Hort. Transactions, but better adapted for early forcing than the winter keeping of grapes. Where economy is an important object, the pit fig. 3; is well suited for either early or late grapes as by a common cucumber or melon frame, placed upon the posts, just to give head room beneath the grapes; (to be trained to a trellis, either of wire, laths, or asier rods; *twelve inches from the glass*.) it will answer the purpose as well as the most expensive pit; the greatest expense being the small fire place at one end, and a flue and shaft at the other end to carry off the smoke. For winter grapes, the less fire heat and the *more* air is given to them the better, the great object being to keep out the damp.

Nearly twenty years have elapsed since I first witnessed grapes successfully cultivated in pots, by a most enterprising Horticulturist, Mr. Buck, Gardener to the Hon. Greville Howard, Esq. Ilford, near Litchfield. They were indeed very fine, and very young vines in small pots. Ever since that time, I have more or less practised it, and never found it difficult to have plenty of fine bunches and fine grapes; besides being the best tasted I ever met with. I have annually produced three dozen fine bunches of grapes, and in their early stage, have picked off four times the number, from White Muscadines; and those growing only in fourteen inch pots for *eight years*. They were six years old when first potted, and during the eight years they neither received fresh soil, nor what is called manured water. They were watered, as required, with soft pond water, such as is supplied from the watering, or *floating* of meadows. After it has passed off, it holds, in solution; and in its most limpid state, all the food which most plants require; and is only such food as they are capable of taking up by their spongeoles, or digesting by the system. They are neither stone nor earth eaters: they are much more pure feeders than animals. It is obvious that water in its meandrings along the rich surface of meadows, and whilst depositing its grosser sediment, as it is filtering through the herbage, takes up

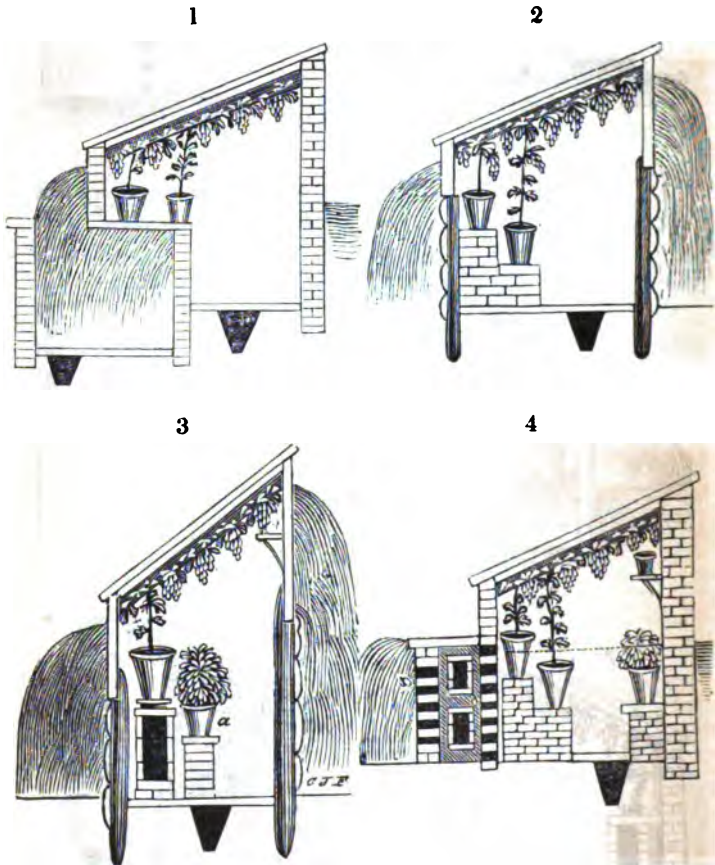


FIG. 3.—In early forcing, a row of Kidney-Beans (a) may be forced, or young vines brought forward.

FIG. 4, is perhaps the best for pines of any sort of pit used. The flue being on the outside no part of the pit is occupied unnecessarily, and the Ammoniacal and Carbonic Gases, &c. so beneficial to the pine, from the steam of hot dung, can readily be thrown into the atmosphere of the pit through the pigeon-holes (a, b) and when not required the dung can be removed and the holes (a) stopped up. It is figured as fitted up for Vines in pots, but the dotted line (c) represents the pine pit.

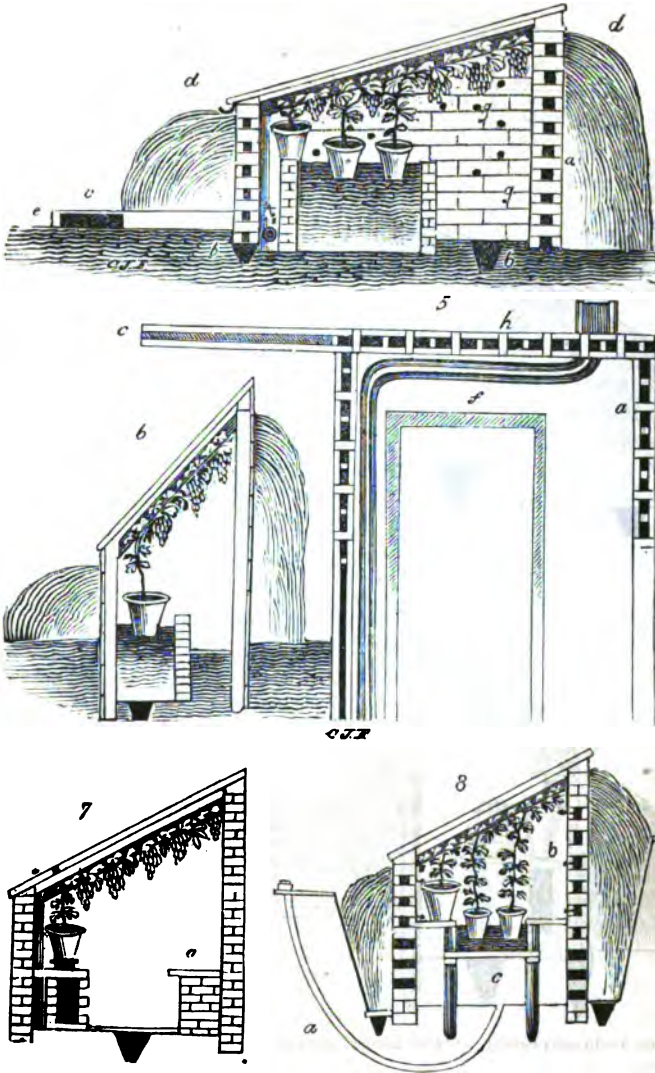


FIG. 5.—A hollow walled pit, on the plan of T. A. Knight, Esq. with a tan or other pit inside of fermenting matter. (a) Hollow wall. (b) Drains. (c) Air-Drain to force the heated air in the hollow wall into the atmosphere of the pit through the holes (g). Linings of hot dung (d) are placed to heat the air in the hollow wall. (e) Ground level. (f) Hot-water Pipes to dry the air of the pit in damp weather, or winter. (h) Part of the Ground Plan.

FIG. 6.—An excellent and cheap Pit for early forcing; dung or tan inside, and a good dung lining behind.

FIG. 7.—(a) Seat along the back of the pit, for accommodation in vine-dressing, thinning, &c.

FIG. 8.—Excellent Chambered Pit with dung linings for early forcing Grapes in pots, with a bed of tan or leaves. The lights require to be removed to dress them. (a) Air-Drain. (b) Plugs. (c) Air-Chamber. This makes a good Pine-Pit.

in its progress, all the food that vegetables need. It becomes strongly impregnated with the fertilizing exhalations from the earth, and with the various important gases evolved by the constant progress of decomposition constantly going on at the *surface*, as well as by those subtile nutritious particles continually afloat in the atmosphere, and which are born down by attraction, gravitation, wind, rains, and by dews; where they lie upon the surface till dissolved and taken up by the fluids as food for vegetation, and are borne along in abundance by the surface waters, where it is fitted *for our important purposes*. With such water I supply my vines plentifully at a time, but never more than *once* a day, and then, not unless they stand in need of it, which is obvious by the plants inclining to flag for want of food. I have then a sure criterion, that I can give them plenty without danger. In the last stage of swelling, they take up much, and, if judiciously supplied, will swell off to a fine size, provided plenty of air be judiciously admitted to them, and a due vapour be kept up whilst the pit is closed. It is very important to give large portions of air to every plant under forcing; nearly taking the lights off in fine weather, and closing them early in the afternoon; but at bed-time admit a circulation of *night air*, and keep up the required temperature by a little fire, or a stronger lining. Early in the morning, close up, leaving only sufficient at the top to allow the condensing vapour to pass off; let it thus remain till the glass rises to, from 70 to 80 degs. before more air be given. Then give it at two or three different times, if the day be fine, till the pit or house is as much exposed to the influence of the atmospheric air as it conveniently and safely can be.

I think it novel and of much importance to those who have sweet water pines, Miller's Burgundy, Muscadines, or others which are common upon walls; to know that they can cut off branches from them, and have a good crop of fruit the first year in pots. Take a cutting of any length, from five to twenty feet; no matter, if at the extremity, it be five or six years old; drain the bottom of the pot well, coil the branch *round and round* the inside of it, from two to five or six times, according to the length of the branch; and leave above the pot a length of stem suitable for the accommodation. Then fill up the pot firmly, to within an inch of the top, with a good mellow compost, and place a neat stake to steady the shoot in the direction most suitable; *and to prevent evaporation, and to encourage roots all over the stem*, wrap it up neatly with moss, *and keep it constantly moist, till the grapes are safely set*. Then clear off the moss and roots, and encourage those in the pots by proper warmth

and shifting, and, if it can be done, they should be placed in a bottom heat till the grapes are set at least. I have had fine and well perfected grapes from a muscat cutting this season, treated as I have described; and those from a cutting ten feet long, as well as from a Black Damascus, and Black Trepoli, the berries of all being finely swelled, and of fine flavour.

The vines are now extremely fine, and the wood well prepared for a plentiful crop next season. The eyes are as fine as I could wish them; the wood is from one inch to one inch and a quarter in girth. I have one vine coiled into a pot, but not more than eight or nine inches above it, which has got a young shoot, twice stopped, eight feet long, and is one inch and a quarter in girth; if I had not stopped it, I have no doubt of its being from twenty to thirty feet long; but should not so certainly have accomplished my object, in having it a fine bearing shoot for next season; which it now promises to be.

It is known to the experienced grape-grower, that his only certainty of fruit buds depends upon such shoot springing from an eye of the previous year; if that be not attended to, and it spring direct from old wood, without a previously prepared eye, however fine the shoot may be, it is generally abortive. This can be obviated, and *a year may be gained* by cutting the shoot back, after it has made six or eight eyes to the second or third. Pull off the laterals as soon as they appear, and encourage the uppermost main eye to break; by such an act, fine bearing wood will be produced for the following season; but if weak, it must not be permitted to run to too great a length till its top is pinched off, so as to strengthen the wood and eyes for next year, but not so as to excite such eyes into action, unless desired. For, if so, such as the Verdelho and others of the small and free bearing sorts can be made to *fruit the same season*, when the main eyes are excited, and yet not affect them for another year's fruiting. I have at this time two crops of grapes upon what was this spring an old sickly stump of a Verdelho vine in a small pot; it had neither roots nor wood younger than three years; and I think if I were to excite some more eyes to spring, by toping, I might have a third and even a fourth shew of fruit; and yet ensure a good crop next season.

None who are desirous of growing grapes in pots need fear attempting it; for if they will attend to the excellent rules laid down by Mr. Stafford, and other experienced growers, they are certain to succeed. Those who have written in condemnation of the system, I would recommend not to give it up as *fruitless*; for if they will try it by my rules, they cannot fail to produce plenty of the *choicest fruit*.

I wish Mr. Buck would be so kind as to gratify us by laying his practice before the public; none would feel more gratified than myself.

The "Journeyman Gardener" has not yet favoured me with a call; I should be happy to receive a visit from him, and I will show him pendant shoots on grafts of this year, from four to five feet long at this time, and many likely to be six feet by the end of the season, upwards of fifty of them being upon the same tree; which has been barren for more than fifty years. I anticipate blossom buds this season upon many of them; and, if the season be favourable, fruit next.

I have sent you a drawing of one of the hollow-walled pits, by T. A. Knight, Esq. with an internal pit for tan, or leaves, to ferment, to plunge vine pots into, or to be heated by steam as all our pine pits are at Welbeck. I think such a pit excellent for growing vines in pots; but it is more expensive than the above plans.

Professors Lindley and Rennie, of the London and the King's Colleges, have lately published two excellent and very cheap little works upon Horticultural subjects, of the most importance to the horticultural amateur, and the practical gardener; neither of which ought to be without them, for in that case they can only grope their mazy way through their horticultural vocations. Professor Lindley's is entitled "An Outline of the first principles of Horticulture," and by a little attention to his clear yet brief explanations, it will be found of the utmost importance to those who are ambitious to excel in horticultural pursuits. Professor Rennie's is called an "Alphabet of Scientific Gardening, for the use of beginners;" I have no doubt that those of long and extensive practice will derive much important information by studying it, and will at last admit, that, without the aid of these two little treasures, they would never have known their way, and that they were keys to all the secrets of the art, which being carried along with them in their practice, all difficulties had vanished as they approached, and they had nothing to do but add perseverance to practice.

The Professors have also published two excellent little books upon Botany, which ought to be in the possession of every lover of flowers: Mr. Lindley's is entitled "An Outline of the first principles of Botany;" and is a most useful little work to the young botanist, and most interesting to the older student. The study of Mr. Rennie's little botanical work, entitled an "Alphabet of Botany," leads the student imperceptibly to a better acquaintance with physiological Botany, and I would recommend him, next in order, to study the excellent Lectures of Anthony Todd Thompson, M. D.; the practi-

cal horticulturist ought not to be without such works. I am persuaded that all amateurs will not fail to procure them, to enable them to ensure their various experiments, where, without such they *must* fail in many most important ones.

ARTICLE IV.

ON THE CULTURE OF VINES IN POTS.

BY MR. WM. BROWN, JUN.

MR. GREY not having succeeded with his vine culture in pots, I beg to refer him to Mr. Stafford's remarks on the growth of the vine in pots, Vol. 1, where he will find a model to answer his views, if he puts in action Mr. Stafford's plan of procedure. Mr. Grey potted his vines in maiden mould, and watered them with liquid manure; but if any one plant vines in a rich soil, and the pot be not full of roots, of what use is liquid manure poured upon it from time to time, when soft water, that natural agent of existence, will answer the end, if judiciously applied. Mr. Grey says he kept his vines in the vinery, but unless he trained each vine to a single wire: see Mr. Stafford's remarks, Vol. 1, No. 11, and exposed them to the powerful influence of the solar light, he would have no chance of good fruit. Besides, Mr. Grey kept his vines in the greenhouse, until every eye was swelled ready to push into leaf, and then placed them in the vinery at 70 degs. of heat. This is too sudden a transition, and quite contrary to nature, for when vegetation is put into action, the more gradually she is brought forth, the more we imitate nature, and the more prolific will be the results. Mr. Stafford's procedure is, on the first of January, to place them in the vinery on the front flue, and then the roots and branch both come into action at once, the heat being regular, without any more removing throughout the season. The practice has been, and I believe now is, to raise young vines and place them close together at one end of the house, without attending to their primitive fructifying points, viz. air, light, and water. Such being the case, accounts appear very flattering, but I am sure without a full exposure to the light, no fructifying parts come to perfection. If a last year's plant be placed on the front flue of a vinery or pine stove, see Mr. Stafford's remarks, Vol. 1, No. 11, and trained up near the glass, so as to enjoy a large proportion of light and air with regular watering, that is when they appear dry, fruit will be obtained this season on Mr. Stafford's method of growing vines in pots, equal if not superior to those planted out, both in

size and flavour. As respects the watering, I have been in the habit of watering the vine in pots during the last four years. I never had occasion to water them twice a day, when a feeder was placed under the pot. Mr. Grey says the vine does not cut like well ripened wood, but I venture to state, that vines in pots are fully competent to ripen the wood, when you can keep the roots pluvius or arid, warm or cold, at any period of the year. It is obvious that Mr. Grey has not made an impartial trial of vines in pots, or no doubt, like other gardeners, he would have produced fruit with success. I recollect once counting between forty and fifty shows of fruit on a single vine in a pot. I believe the same has been the case with several gentlemen's gardeners in attempting to grow grapes from pots. I remember my father attempting to grow grapes from vines in pots, and he did not succeed, there being no more than two or three small bunches on each. Hence he determined to relinquish the system, until hearing of Mr. Stafford's ample success, he went over, and that gentleman having kindly related his method of treating the vine in pots, my father has practised it ever since with success. He will forward a few remarks to the Conductor of the *Register* at the earliest opportunity, if proof be wanting elsewhere as to Mr. Stafford's system. I can assure Mr. Grey, that vines in pots can be brought to good perfection, if skilfully treated.

Ashby de la Zouch, Sept. 4th, 1833.

ARTICLE V.

COLLECTIONS AND RECOLLECTIONS.

THE WHITE THORN, when young, is perhaps the most delicate and tender of the British native shrubs, but when arrived at maturity it is among the most hardy. The common but absurd opinion is, that as the thorn is very hardy when old, and may be cut and splashed at pleasure, that it is hardy in every stage of its growth; but few plants require more assiduous care.—*Roxburgh Report, 1794.*

Note.—The extractor has long entertained doubts, upon the very principle here explained, whether the white-thorn be, or be not, the very excellent hedge plant which is generally supposed, or in other words, whether a great deal more money is not laid out in obtaining good white-thorn hedges and maintaining them, than would give others equally efficient for all farming purposes. And whether, at all events, in those countries where neat agriculture does not as yet prevail, the attempt to introduce thorn hedges is not a mistake.

ON GROWING ONIONS.—I am induced to send you a few observations on the culture of Onions in rows, which I practised this season in my garden. The ground intended for my onion crop, I always put in ridges, in October. About the middle of February, I level down the ridges, and smooth the ground, and fit it for sowing the seed. I make my bed 12 feet long, and 8 feet wide, allowing it, after being made, to lay and pulverize until the 8th of March, at which time I sow my seed. In sowing, I make drills across the beds, about sixteen inches apart, and cover the seed, when sown in the drills, about half an inch deep. I afterwards press the soil on the seed with my foot, and rake it over smooth; and in about a fortnight the plants begin to appear. I then cover my bed with wood ashes, and this prevents the worms from drawing them in, and also accelerates the growth of the plants. About once in three weeks, I regularly hoe between the rows. In the months of May and June, when the onions begin to bulb, I water them about four times with soap suds, and keep the earth hollow between the rows. I do not follow the plan of stopping the growth by breaking the stalks, but permit them to grow as long as they will. When the stalks break down of themselves, I pull up the onions, so that my crop is in course of drawing for many days. Some of my onions measure sixteen inches in circumference, and many of them weigh upwards of a pound.

J. K.

BROOM DRAINS.—When stones are not plentiful, broom is sometimes used in drains. The drain is filled to the height of about twenty inches with broom, not laid at random, but placed in a sloping direction with the ends near the roots undermost, so that the small branches near the top make a close covering, and no earth can get through to stop the water. The workman, in placing the broom, begins at the highest part of the drain, and proceeds downwards. Many made thirty years ago continue to run well.—*Roxburgh Report*, 1794.

BROOM FOR FIRE WOOD.—Broom has long been used as firewood; it was about fifty years ago reckoned the most profitable crop the land could produce. It was cut down every seven or eight years.

TURNIPS.—Mr. Rutherford, in 1747, began his experiments on drilling turnips in Scotland. The field being properly ploughed, was levelled and harrowed very fine, the drills were a common Scotch plough with the coulter taken off. The drills were made by the sock; the plough was drawn by one horse, a man leading it by the head. The drills were two feet apart. John Martin, the doctor's servant, afterwards Kirk officer of Melrose, went immediately behind the

plough and threw the seed, not with a sparing hand, into the drills; he was followed by a man who harrowed in the seed with a whin (gorse) bush, which he drew after him. The turnips increased to a great size, but not a few of them fell a sacrifice to the curiosity of the people. To prevent nocturnal incursions into the field, a great number of crow-foots of iron were planted amongst the turnips, an intimation whereof was made at the kirk door on Sundays, and by beat of drum in Melrose on Market days. The bullocks fed on these turnips, for they were so large that the people in the neighbourhood looked upon them as monsters, and would not buy them.—*Ib.*

PEAR TREES AT MELROSE.—The largest and oldest pear trees in the county ornament the gardens at Melrose, two of them called the Duke's Pear, and the Thorle or Horle Pear produced, in 1793, no fewer than 6000 pears to perfection, besides those shaken off and gathered before they were ripe. They were sold to retailers, at 8s. a *fislot* or fruit peck, sixteen of which make a *boll*. The tree is late and large, and never fails to afford a good crop. The pear is hard, round and small, keeps long, and then turns yellowish. These trees must be some hundreds of years old.—*Ib.*

Note.—Are not these sorts worth propagating?

NETS A FENCE AGAINST SHEEP.—If sheep be put into a field to eat off turnips, where there is a young hedge, it ought to be at least secured with a net, which is neither much expense nor trouble.—*Middlesex Report, 1794.*

HOW TO KILL FERN.—A woman has a stick, with a blade having dull edges at one end; she strikes the stems and bruises them: she will do a great deal in a day. This is repeated two or three times in the summer, on the next morning a gummy consistence is found to exude, and the fern gradually disappears.—*Nottingham Report, 1794.*

THOS. DEE.

TO DESTROY THE THRIPS.—A Correspondent "H. D." wishes to know in page 233, What will destroy the Thrips? I have always found that fumigating destroys them effectually. I have been somewhat troubled with them on cucumbers and melons grown on wires by fire heat, and, not liking to fumigate because of the injury the leaves receive from the smoke, I took a quarter of a pint of strong tobacco-water, and having added to it one gallon of clear water, I syringed the leaves daily with this until they were thoroughly clear. If the leaves be infested with the red spider (*Acarus*), add a little sulphur to the mixture.

J. HAYTHORN.

Eastwood, near Nottingham, Sept. 12th, 1833.

Our Correspondent having stated that fumigation is not effectual, we would advise, that if the above mixture does not suffice, it be made a little stronger of tobacco-water, and add also about a quarter of a pound of common brown soap to every gallon of the mixture used, which seldom fails.

PROPAGATION OF DOUBLE CAMELLIAS BY CUTTINGS.—The double Camellias will strike from cuttings nearly as readily as single ones, but they seldom or ever grow strong, and therefore never make good flowering plants. See page 849, Vol. 1, where an answer is given to H. L. T. on the subject. The remainder of H. L. T.'s request, page 138, Vol. 2, shall be attended to.

TREATMENT OF THE DAPHNE PONTICA ROSEA.—To Daphne, p. 138. This variety is not quite so hardy as the pontica; it should be sheltered in a pit or greenhouse during winter, or it is liable to be injured by frost. Its culture is perfectly simple, for it will thrive in any light sandy soil, but prefers peat. It should be planted in pots, and plunged in the open borders, in a situation where it will be totally shaded from the mid-day sun. When cold weather commences take it up, and remove it to the greenhouse, the frame, or other place most convenient. It is readily propagated by grafting on the common spurge laurel, or by cuttings, but the former make the finest plants. They also succeed very well when planted out in the open border without pots, but they will require to be taken up and potted at the commencement of winter.

VEGETABLES THAT WILL THRIVE ON A NORTH BORDER.—In answer to Suffolk, page 233, Sea-Cale will grow exceedingly well in such a situation, providing the ground be well trenched. Also Rhubarb, Leeks, and Cape Broccoli; it may also be very advantageously planted with Cauliflower plants in the spring. When the plants are removed from the frames, to plant for the first general crop on a south border, plant at the same time on the north side, and they will succeed those on a southern aspect admirably well.

TO PRESERVE SPECIMENS OF PLANTS.—To "J. K." p. 426, we would say, see Vol. 1, pages 88, and 742, and we here introduce the opinion of Dr. Lindley, as stated in his "Introduction to Botany," where he says, "in selecting specimens for drying, care must be taken that they exhibit the usual character of the species: no imperfect or monstrous shoot should be made use of. If the leaves of different parts of the species vary, as is often the case in herbaceous plants, examples of both should be preserved. The twig should not be more woody than is unavoidable, because of its not lying compactly in the herbarium. If the flower grow from a very large woody

part of the trunk, as is often the case ; as in some *Malpighias*, *Cynometra*, &c. then they should be preserved with a piece of the bark only adhering to them. It is also very important that ripe fruit should accompany the specimen. When the fruit is small, or thin, or capable of compression without injury, a second dried specimen may be added to that exhibiting the flowers ; but when it is large and woody it must be preserved separately. Next to a judicious selection of specimens, it is important to dry them in the best manner. For this purpose, various methods have been proposed : some of the simplest and most practicable may be mentioned. If you are in a country where there is much sun heat, it is an excellent plan to place the specimen between the leaves of a sheet of paper, and pour as much dry sand or earth over it as will press every part flat ; leave it in the full sunshine and it will generally dry in a few hours. But in travelling, when conveniences of this kind cannot be had, and in wild uninhabited regions, it is better to have two or more pasteboards of the size of the paper in which your specimens are dried, and some stout cord or leather straps. Having gathered specimens until you are apprehensive of their shrivelling, fill each sheet of paper with as many as it will contain ; and having thus formed a good stout bundle, place it between the pasteboards, and compress it with your cord or straps. In the evening, or at the first convenient opportunity unstrap the package, take a fresh sheet of paper and make it very dry and hot before the fire : into this sheet so heated, transfer the specimens in the first of the papers in your package ; then dry that sheet, and shift into it the specimens lying in the second sheet ; and so go on, till all your specimens are shifted ; then strap up the package anew, and repeat the operation at every convenient opportunity, till the plants are dry. They should then be transferred to fresh paper, tied up rather loosely, and laid by. Should the botanist be stationary, he may dry his paper in the sun ; if the number of specimens for preparation is inconsiderable, put them between cushions, in a press resembling a napkin press, laying it in the sun, or before a hot fire. It is extremely important that specimens should be dried quickly, otherwise they are apt to become mouldy and rotten, or black, and to fall in pieces. Notwithstanding all the precautions that can be taken, some plants, such as *Orchideæ*, will fall in pieces in drying : when this is the case, the fragments are to be carefully preserved, in order to be put together when the specimen is finally glued down. In many cases, particularly those of *Coniferæ*, *Ericæ*, &c. the leaves may be prevented falling off by plunging the specimen, when newly gathered, for a minute into *boiling* water. The great object in dry-

ing a specimen is to preserve its colour, if possible, which is not often the case, and not to press it so flat as to crush any of the parts, because that renders it impossible subsequently to analyse them. When specimens have been thoroughly dried, they should be fastened by strong glue, not gum, nor paste, to half sheet of good stout white paper: the place where they were found, or the person from whom they were obtained, should be written at the foot of each specimen, and the name at the lowest right hand corner. If any of the flowers, or fruits, or seeds, be loose, they should be put into small paper cases, which may be glued in some convenient place to the paper. These cases are extremely useful: and fragments so preserved, being well adapted for subsequent analysis, will often prevent the specimen itself from being pulled in pieces. The best size for the paper appears by experience to be $10\frac{1}{2}$ inches by $16\frac{1}{2}$. Linnæus used a size resembling our foolscap, but it is much too small; and a few employ paper $11\frac{1}{2}$ inches by $18\frac{1}{2}$: but that is larger than is necessary, and much too expensive. In analysing dried specimens, the flowers or fruits should always be softened in boiling-water: this renders all the parts pliable, and often restores them to their original position. In arranging specimens when thus prepared, every species of the same genus should be put into a wrapper, formed of a whole sheet of paper, and marked at the lower left corner with the name of the genus. The genera should then be put together, according to their natural orders. To preserve plants against the depredations of insects, by which, especially the little *Anobium castaneum*, they are apt to be much infested, it has been recommended to wash each specimen with a solution of corrosive sublimate, in camphorated spirits of wine, but, independently of this being a doubtful mode of preservation, it is expensive, and, in large collections, extremely troublesome. I have found that suspending little open paper bags, filled with camphor, in the inside of the doors of my cabinets, is a far more simple and a most effectual protection. It is true, that camphor will not drive away the larvæ that may be carried into the herbarium in fresh specimens; but the moment they become perfect insects, they quit the cases without leaving any eggs behind them.

J. LINDLEY, Esq. *Int. to Bot.*

TO PRESERVE MOTHS AND BUTTERFLIES.—To J. K. page 426, we refer him to Vol. 1, page 89, and 142—3, where the readiest mode of killing and fixing to the setting board is detailed and illustrated by engravings. We may name two or three other modes of killing them, previous to their being placed in the cabinet. As soon as the insect is caught, to put it in a wide-mouthed bottle, containing

a quantity of volatile or smelling salts, and to cork up the bottle, when in a minute or two after being confined it will be completely deprived of life. Oxalic acid, dissolved in a little water, and used in the same way as prussic acid, Vol. 1, p. 142, will instantly kill them. This is not near so dear as prussic acid; for about two pennyworth would kill sufficient for a whole cabinet. It must be strictly remembered that both these acids are strong poisons, and should, therefore, be very carefully labelled and preserved from children. The drawers of the cabinet should be made of well-seasoned mahogany or wainscot: for deal is liable to warp and split. Strips of velvet should be glued round the edges of the doors, to make them shut close, and keep out the dust. The drawers which contain the insects should be lined with cork at the bottom, and covered with fine wove paper, they must also be glazed to prevent the admission of dust or air. Small holes should be bored in the sides of the drawers, to emit the scent of the camphor. Cabinets should always be placed against a partition wall, in a dry room. *Ingpen*. Many moths of the tribe of *Tinea* are so extremely minute, that it is almost impossible to set them without defacing their characters: indeed, the trunk of some is so small as not to admit of being pierced by a pin. These, therefore, it is advisable merely to gum upon card, expanding their wings (which the gum will easily retain in their proper situation) with a camel's hair pencil. Camphor is the general remedy recommended to keep out the mites, &c. from preying on these dead insects* and turpentine also is found to be useful for the purpose, although some have thought it to be injurious to the specimens themselves. The safest mode appears to be that recommended page 143, Vol. 1, as it renders the dead insects for ever poisonous and unfit to eat.

TO PRESERVE BIRDS' EGGS.—To J. K. page 426. The chief reason of birds' eggs losing their colour, after being kept a while, is the thin white membrane next the shell being left within, and a portion of the yolk or white adhering to it at the time the egg is blown; in a short time it corrupts and produces a disagreeable smell, as well as causes the colours to fade. This may be remedied by the following method, which we learnt from a correspondent to the Magazine of Natural History. Having made a small hole at each end of the egg with a pin, blow out the contents, and when this is done get a cupful of water, and, immersing the sharp end of the shell into it, apply your mouth to the blunt end, and suck up some of the water into the shell. Then put your finger and thumb upon the two holes,

* Kirby and Spence.

shake the water well within, and after this blow it out. The water will clear your eggs of any remains of yolk or white which might remain after blowing. If once sucking up of water will not suffice, make a second or a third. If the outside of the shell be dirty, wash it with soap and water, with a nail brush. Then, to prevent the thin white membrane from corrupting, fill a wine-glass with a solution of corrosive sublimate in alcohol or spirits of wine; draw up some of this into it in the same way as you did the water, shake it and blow it out again, and it is beyond the reach of corruption. All the white and spotted eggs may now be sparingly washed over with a coat of copal varnish, by means of a camel's hair pencil. But for green or blue eggs gum arabic must be used, as varnish is apt to injure their colour.

CULTURE OF THE MUSA SAPIENTA AND PARADISIACA.—To T. K. S. page 427. The culture of the Musa is attended with little difficulty. After taking off the suckers, plant them in large pots, in a soil composed of one-third of rich sandy loam, and two-thirds of a mixture of vegetable mould, well rotted dung, and sandy peat. Give them, whilst young, a temperature of from 60 to 70 degrees. When they come into flower, apply the pollen to the stigma, by means of a small feather. This should always be done when the air of the house is pretty dry, and then they not uncommonly produce their fruit pretty well. Never cut off any of the leaves until they are withered, for if cut off too soon, the plants bleed excessively, and the growth of the succeeding leaves is greatly weakened. The leaves are also very easily split, which if done greatly retards the growth of the plant. After they have been impregnated, they may be placed in a warmer part of the stove, where they will get from 70 to 80, or even 85 degrees; they will require no bottom heat, and may have plenty of air in fine weather, and a good supply of water. Much depends upon the roots having abundance of room, and being well supplied with water, in order to their perfecting fruit. When in a healthy growing state, the leaves of *M. paradisiaca* will grow 8 or 9 feet long, and those of the Banana (*M. sapientum*) something larger.

CULTURE OF BLUE HYDRANGEAS.—I see at page 234, that there is still an enquiry relative to growing blue hydrangeas. It is my firm opinion, that let the soils or treatment be what they may, if the plants be grown in pots, no one can depend on having fine blue flowers. I have had some of the finest plants, which bore a profusion of very fine blue flowers; several persons begged cuttings, supposing them to be of a different sort: others felt anxious to be informed of the peculiar treatment they received, &c. I will endeavour briefly

to state my method of treating them. Having several fine plants more than I wished to keep in pots, I turned them out about May into the borders of the flower-garden with the balls entire. The soil of the borders was rather sandy, the situation was low, and the bottom cold, but well sheltered; and the plants flowered in the summer of the ordinary colour. As winter approached, I covered the roots and lower parts of the branches with old tan, any light substance would do, to keep out the frost and preserve the stem. The tops of the branches were killed in winter; but in spring the lower parts of the stem threw up some fine strong shoots, which bore a profusion of blue flowers. In the winter I treated them as before, and the summer following they were much improved, both in strength and beauty of colour. These facts have led me to judge that they require full liberty for their roots and plenty of moisture. Perhaps they might do well turned out in the border of a conservatory.

Eastwood, Sep. 12, 1833.

J. HAYTHORN.

SEVEN-EARED EGYPTIAN WHEAT.—This grain really produces seven ears on the same stem, and the bread made from the flour is excellent. The price is also reduced one half this year, and the grower, Mr. B. Wilkinson, seedsman, Hounslow, has but little seed remaining. *Culture.*—It produces the most abundantly on a good yellow loam, four feet deep, the weaker the earth, the less the produce, if sown on fallow, one barrowfull of rotten dung, if peas or early potatoes were the last crop, and dunged in the spring, one peck of lime to the rot, the ground to be dug with the lime or dung spread over it; the drills to be made eight inches apart, and two inches deep, and to be raked. The seed wheat to be sown in the drills, one pint of wheat to a rod of ground; this wheat to be brined and limed, and the drills to be raked in and trod upon. Time of sowing, is the first week in October. Growth, a solid stalk from five to six feet high. Some of the finest ears to be selected every year for seed. The above directions accompany each packet, on a printed paper. The packet we have received appears to be nice plump grain. And it is said that the Agricultural Society, and Mr. Salisbury, have approved of it as being of a superior quality.

ON THE DAHLIA.—October is the proper time to take up the roots. Clear off all the earth, and put them in some place secure from the frost. I place mine in the greenhouse, at the back of the stand, under some arches. I begin with my dahlias the last week in February, but I think the first week in March is early enough. I put them in the hot house, or in the frames; in the latter case they require care, as the damp is apt to rot them. After I find that they

have pushed forth shoots about three inches, I then propagate them, by taking off each shoot and planting them in small pots. I place them in a frame where there is a gentle heat, until they are well rooted, which happens in about a fortnight or three weeks. Then they are removed into an old frame, and kept hardy with the weather, until the middle of May, when they are planted out. My soil is a very bad one, it is a blue clay, and therefore I make holes about two feet square and deep. I fill the holes with one half rich loam, and the other half of leaf earth, bog, and very rotten dung, mixed well together, which is done in the autumn before. Dahlias should be planted deep, for fear of a dry summer. When the plants exhibit flower buds, I take off all the small ones, leaving one or two on each stock, and cut off all useless shoots. Of some I leave only one main shoot from the bottom, and the side shoots trained like Espalier, of others I put three stakes in a triangular form, and tie the cord round the stakes about a foot apart, thus forming a stand, and making them very secure from the wind. To make Dahlias flower finely, they must be kept thin of buds and shoots.

J. HAMMOND.

THE FIRST INTRODUCTION of the most kinds of plants and fruits into new settled countries, is always a subject of much curiosity. It therefore will, I doubt not, interest many of your readers to know the progress made in the propagation of some of the European plants at the New Colony at Swan River, in Western Australia. To those who may have connexions at that place, it will also be some guidance as to what kinds of plants it is desirable to send to that settlement. The following list is taken from the Western Australia Newspaper of March, 1833.

The Vine grows very strong, that in the Botanical Garden appears to be the Royal muscadine.

The Fig. *Ficus cusica*. Two varieties from the Cape of Good Hope are established in the Colony.

The Peach. There are many seedling plants, a small plant of the Violette Hative has just reached the Colony, but is not yet established. Common Almond in great plenty from seed.

The Apple. There are several sorts in the Colony, but the names are lost, except a small plant of the nonpareil just arrived.

The Pear. The only pear-trees are seedling plants.

Fragaria Virginica. Virginean Strawberry variety very abundant in the Colony.

The Plumb. The common Slow and Bullace, a small plant of the Orleans plumb has just arrived.

The Olive. Four varieties well established.

Morus nigra, Common Mulberry, a small plant has just reached the Colony.

Morus alba, White Mulberry, is well established.

The Pine Apple thrives in the Colony, in the open air, from September to May, but requires the protection of a frame, during the winter of this climate.

Musa Paradisiaca, common Plantain in fruit in the government garden.

Phormium tenax, New Zealand Flax, well established from a plant from the Kew gardens.

Physalis Peruviana, called here the Cape Gooseberry, is very abundant in the Colony.

The Melon. Several varieties, which produce very fine fruit, in the greatest abundance. I. T.

VARIETIES OF THE CHERRY. In classing the varieties of the cherry, the French have certainly been more successful than any others, and Pomological writers chiefly adopt their method of arrangement. But the authors of that country are far from being agreed upon the sorts that should be referred to their divisions. The divisions are *Merisiers*, *Guigniers*, *Bigarreauteurs*, *Cerisiers*, and *Griottiers*.

1st. *The Merisiers*. These are like wild cherries, small, and consequently have but little flesh, the latter containing, even in its fullest maturity, enough of bitterness to justify the name of *Merise*, formed it is said from the words *Cerise amère*. From this French name of *Merise* has probably originated the appellation given to wild cherries in some parts of England, where they are called *Merries*.

2nd. *The Guigniers*. Partly in this division, and partly in that of the *Bigarreauteurs*, are included the Heart cherries of this country. Of the generality of those trees in the society's garden, which bear the name of *Guignier*, the fruit is heart-shaped, with rather tender, juicy, sweet flesh; their colour is chiefly black.

3rd. *The Bigarreauteurs*.---The principal difference between these and the *Guigniers* consists in the greater firmness of the flesh of the *Bigarreaux*, but from this difference no complete distinction can be drawn, for the tenderest of the *Bigarreaux*, and the firmest of the *Guignes* are, in this respect, on an equality. The *Bigarreaux* are generally of a pale waxy white on the one side, with a blush of red on the other, and to such partly coloured fruit the word was originally applied. The trees of these three divisions have a near resemblance to each other, and in many respects they absolutely agree.

4th. The *Cerisiers*.---These and also the *Griottiers*, are very distinct from those already treated of. They include those cherries whose fruit has a tender aqueous pulp, more or less acid; they can also be known by their wood, leaves and flowers. The May Duke, and Kentish or Flemish, are typical varieties of the *Cerisiers*.

5th. The *Griottiers*.---Formerly these were written *Agriottiers*, probably from the sharpness of their juice, a quality which prevails more or less in all of them. The distinction between them and the *Cerisiers*, is, however, very indefinite; the *Morella* tribe chiefly composes this division. Although the distinctions of their divisions are in some cases sufficiently definite, yet in other cases they are so vague as to be unavailable for the purposes of discrimination. To obviate this, Mr. Thompson, under gardener in the fruit department of the Society of London, has proposed a classification of his own, dividing the whole into two classes. The first class consists of trees, the leaves of which are generally large, pendent, waved on the margin, with sharp prominent veins beneath, coarsely serrated, of thinner texture, and of a more yellowish green than those of the following class; having buds pointed, flowers large, proceeding from the wood of not less than two years old; the petals loosely set, not forming a well and beautifully expanded cup-shaped flower, appearing like those of the May Duke, Kentish, &c. the stamens slender and irregular in length, some being longer and others shorter than the style. The second class is composed of aqueous cherries, such as the May Duke, Kentish, and *Morella*. The leaves are generally smaller than those of the preceding class, and have their margins plain, with the veins beneath, as they approach the margin, almost buried in the parenchyma, which is thicker than in the other class. The petioles support the leaves erect, or at least from hanging loosely and pendent; the latter are deep green. The flowers expand widely, and the petals hang not loose, but form a regular cup-shaped flower, with strong stamens, generally shorter than the style.

MR. THOMPSON'S CLASSIFICATION.

CLASS I.—LEAVES WAVED ON THE MARGIN.

† Fruit heart-shaped, or oval.

- * Colour uniform, dark red or black,.....Section 1
- * * Colour pale yellow and red do. 2
- * * * Colour uniform, pale yellow..... do. 3

† † Fruit round or oblate.

- * Colour uniform, dark red or black..... do. 4
- * * Colour pale yellow and red..... do. 5
- * * * Colour uniform, pale yellow..... do. 6

CLASS II.—LEAVES WITH THE MARGIN PLAIN.

† Fruit roundish, heart-shaped.

* Flesh sweet.

a. Juice pale.....Section 7

b. Juice purple do. 8

* * Flesh acid.

a. Juice pale do. 9

b. Juice purple..... do. 10

† † Fruit round or obviate.

* Flesh sweet.

a. Juice pale..... do. 11

b. Juice purple..... do. 12

* * Flesh acid.

a. Juice pale..... do. 13

b. Juice purple..... do. 14

These fourteen divisions contain 57 sorts of cherries, which are minutely described, and their qualities are shewn after the same manner as the pine apple, extracted and inserted in volume 1, of our Register. Of the preceding varieties, the following will form a very select collection for different purposes and situations.

FOR STANDARDS.

May Duke	under Section 12.	Downton,	under Section 2.
Royal Duke	ditto	12.	Knight's Early Black, 1.
Late Duke,	ditto	7.	Black Tartarian, 1.
Black Eagle	ditto	1.	Morella 10.
Elton	ditto	2.	Kentish 13.

FOR A SOUTH WALL.

Early Purple Guigne, Sect. 1.	Elton, Sect. 2.
May Duke, under Section 12.	Royal Duke, Section 12.
Knight's Early Black, Sect. 1.	

FOR A NORTH WALL.

Morella.

FOR AN EAST OR WEST WALL.

May Duke, Sect. 12.	Elton, Sect. 2.
Royal Duke, Sect. 12.	Florence, Sect. 2.
Black Tartarian, Sect. 1.	Bigarreau, Sect. 2.

FOR PRESERVING.

Kentish, in Section 13.	Morella, Section 10.
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The Earliest, are

Early Purple Guigne, Sect 1.	Knight's Early Black, Sect. 1.
Werder's Early Heart, Sect. 2.	Bowyer's Early Heart, Sect. 2.
May Duke, Section 12.	

The Latest, are

Late Duke, Section 7.	Bigarreau Tardif de Hildesheim, Sect. 2.
Florence, Section 2.	Morella, Sect. 10

Hort Trans. 2nd Series, Vol. 1, p. 24.

GROWING PINE APPLES in Pots having holes in their sides.--- Observing that those plants thrive best whose roots grew out of the bottoms of the pots into the tan, J. Hawkins, Esq. of Cosford, was induced to have a few pots made with eight holes in the sides of each, to let the roots of the plants run out. These holes are made at equal distances, about the circumference of the finger, round the pot, and from three to four inches from the top. In these pots the plants grow both much quicker and much stronger. It appears to the writer, from this little experiment, that where leaves are used instead of tan, the pits will not require turning more than once a year; for where the roots are grown far into the leaves, the plants will thrive, although there be but little heat in the bed, because they will have all the advantage of it; which is not the case when the roots are confined within pots. It is also inferred, that a pine plant will grow much faster and stronger, and will not require to be shifted into other pots so often as is generally done; that such large pots, namely, 13 inches wide in the clear withinside at the top, and 13 inches deep in the inside will not be wanted; that more plants may be grown in a row; and that fruit equally large and good-flavoured may be grown in much smaller pots than those now generally used.—*Gard. Mag.*

TO INCREASE THE PRODUCE OF VINES. The Vine in Prussia, is in Autumn manured with bullock's blood, and the shoots being laid down and covered with dry leaves are thus protected against severe frosts, and, in the beginning of spring, against those fine days which occasion their early vegetation. They are pruned, in spring, after the leaves are removed.---*Trans. Prus. Gard. Soc. from the Gard. Mag.*

CABBAGES.---M. Furstenuau manures his cabbages with sheep-dung round the stems before they close their heads, which causes them to grow very large and firm, and makes them keep better. ib.

SOWING PLUM STONES.---M. Ohlendorf, at Hamburg, lately communicated to the Prussian Gardening Society, his observations on sowing plum stones. When perfectly ripe, without being divested of the flesh, they are sown in beds in the autumn. The same

mode is practised with cherry stones, and they succeed equally well. M. Lenné observes, that the principle of sowing stone fruit is, not to let the stones become dry, so that they should either be sown directly when gathered, or preserved in moist sand during the winter. M. Otto adds, from his own observation, that the stones of fruit which are injured by maggots never generate.---*Ib.*

GRAFTING PEARS, on *Sorbus aucuparia*.—M. Floss reported to the Prus. Gard. his success in grafting upon these stocks, which grow on sandy soil, where pear trees do not prosper, and which induced him to graft them with pears, which succeeded perfectly. He observed further, that one or two branches of the stock should be left, to hinder the graft from growing too rapidly, because in that case the graft grows much thicker than the stock, and is easily broken by the wind. When branches of the stock are allowed to remain for two or three years, this does not happen. He also observed that the pears obtained from trees treated in this manner seem to keep longer, although they are not so well flavoured as when grafted on the wild pear stocks.---*Ib.*

TO PRESERVE GREENHOUSE PLANTS through winter. About the time at which greenhouse plants are taken from the borders, go over them, and take off what cuttings they can spare, some of which may be cut to pieces, and made the most of; then take pots about eight or nine inches diameter, put twenty or thirty cuttings in each, and plunge the pots up to the rim in a hot-bed, which has but a slight heat. Cover the pots of cuttings with hand glasses, or a small frame, and in a short time the cuttings will have emitted roots. They may remain there as long as the weather is mild. When the frost sets in remove them to a room, or any other place where they may be protected from the cold. A small window, with a shelf in the centre, will contain 200 plants. If the same windows were employed for holding full-sized plants, two common sized pelargoniums would fill it. In about the middle or latter end of March, plant each rooted cutting in a small pot, and put them in any sheltered situation, until the season for transplanting in the open air.---*Peter Mackenzie.*

PART II.

REVIEWS AND EXTRACTS.

EXTRACTS.

FLORICULTURAL INTELLIGENCE.

NEW AND RARE PLANTS, Figured in the Botanical Periodicals for October

CLASS I.—DICOTYLEDONOUS PLANTS OR EXOGENES.

CARYOPHYLLÆ.

LYCHUIS PYRENAICA, Pyrenean Catchfly.—A little perennial with light rose-coloured leaves, valuable only for botanical purposes. An inhabitant of rocky places in the Basses Pyrénées. It has probably of late been only known in a state of cultivation; it is suited for an alpine border or rock-work, and succeeds well in a pot, being perfectly hardy.—*Bot. Mag.*

THYMELEÆ.

PIMELEA ARENARIA, Sand Pimelea.—A small shrub with white flowers, native of New Zealand, where it was discovered by Mr. Allan Cunningham, in 1826.—*Bot. Mag.* It requires the shelter of the greenhouse, and should be potted in sandy loam and peat. It may be increased by cuttings.

EUPHORBIACEÆ.

PLAGIANTHUS DIRARICATUS, Spreading Plagianthus. A small shrub with cream-coloured, small flowers, a native of New Zealand. Hitherto nothing appears to have been known of this singular plant, except through the imperfect figure and description of Forster, who discovered it in its native country. Mr. Allan Cunningham found it in the same country, and introduced it to the Kew Gardens.—*Bot. Mag.*

MYRTACEÆ.

BEAUFORTIA DAMPIERI, Dampier's Beaufortia.—Apparently a dwarf shrub. Flowers are numerous, rose-coloured, collected in whorls below the extremity of a branch. A rare plant, and one of the few shrubs to be found upon the barren, loose, sandy downs, of Dirk Hartog's Island, off Shark's Bay, on the West coast of Australia, where its seeds were gathered in 1822, during the surveying voyage of Capt. P. P. King, and from which the living plants, which have repeatedly flowered in the Royal Gardens at Kew, were raised.—*Bot. Mag.* It requires the greenhouse, should be potted in loam and peat, and may be propagated by cuttings.

PRIMULACEÆ.

LYSIMACHIA AZORICA, Azorian Loose-strife.—A small plant growing about two inches high, with yellow flowers, supposed to be a native of the Azores. It was received at the Glasgow Botanic Garden from that of Copenhagen. It is cultivated in a pot, and treated as an Alpine plant: that is, protected from the sickleness of our winters, and kept in a cool, shady situation in the summer. In the month of June, a pot filled with this little plant is a beautiful object, for the peduncles are so long as to elevate the bright and comparatively large yellow flowers above the tops of the stem and the delicate green foliage.—*Bot. Mag.*

CLASS II.—MONOCOTYLEDONOUS PLANTS OR ENDOGENES.

ORCHIDÆÆ.

GONGORA MACULATA, Spotted Gongora.—Many a strange figure has been met with among orchideous plants, and numerous are the animal forms which Botanists have fancied they could recognise among their singular flowers. Some are said to bear little men and women swinging below their canopy of petals, others have appeared to carry the likeness of lizards, frogs, and other reptiles, crouching among their leaves, while some have been compared to Oberons and Titanias hanging by their tiny arms from the bells, where they have concealed themselves. To what the flowers of the plant now figured can be likened, we know not, unless to some of the fantastic animals of heraldry: a griffin *segreant*, as they term it, would serve as well as any other for a comparison. This most curious species was sent to the Horticultural Society, of London, by Richard Harrison, Esq. from his garden at Liverpool: it was originally introduced from Demerara, in 1832, by Mr. Thomas Moss, of Otterspool. It flowered in the hothouse in May: its bunches of flowers were two feet and a half long, and hung down most gracefully from the pot in which the plant was suspended.—*Bot. Reg.* It requires the stove, and may be potted in turfy-peat, mixed with rotten wood.

SAUROGLOSSUM ELATUM, Tall Lizard's Tongue.—A green flowering stove plant, native of the woods of Brazil, whence it was sent by Mr. Henry Harrison. It requires to be cultivated in earth, like other terrestrial Orchidæ of the Neottia tribe, to some of which, such as *Spiranthes grandiflora* and *Pelexia spiranthis*, it bears a good deal of resemblance.—*Bot. Reg.*

ALPINE PLANTS.—Plants are called alpine when their natural habitations are situated where trees cannot exist, such as the tops of mountains, or very high degrees of latitude. But they are often found in various low situations, where they flower and produce their seeds as well as in those higher regions: yet this is always referable to the agency of wind or water, which convey the seeds from their original places of growth to the lower parts of the country. These plants will grow very well in a bed in the garden, the soil of which should consist of one part peat, one part leaf mould, and two parts pasture ground, mixed with a little sand; though the principal object of their culture is moisture. The Alpine plants, although in winter they are chiefly protected in their native places by snow, can endure very severe frosts, to which they are often exposed before the snow falls, or after it is melted. They are, besides, not much injured by the heat of the sun. In their natural situation, they are continually exposed to extreme changes; from severe frost during the night, to the burning rays of the sun, and to tempests during the day. Artificial rock-work, for the cultivation of

these plants, is of no other use than for ornament. The cultivation of Alpine plants in pots is so far preferable, as it is then easier to afford them the advantages they have in their wild state. In winter, they may be removed to a cool moist place, instead of exposing them to the dry frosts; in summer, they can be kept moist, which is the most essential part in the cultivation of Alpine plants.

—DR. LINK.—*Pruss. Gard. Soc., copied from Gard. Mag.*

OXALIS TETRAPHYLLA.—This plant is used for ornament, especially for edgings. It is also very good when used as sorrel, and the bulbs resemble potatoes in flavour: the leaves, when mixed with New Zealand Spinach, impart to it a peculiar and pleasant acid flavour. The plant is very easily cultivated; it grows in almost any soil, and increases its bulbs abundantly. If planted in a frame, in Spring, it may be obtained earlier.—M. WITZEL.—*Pruss. Gard. Soc., copied from Gard. Mag.*

CULTURE OF ORANGES.—M. Mertens et Herrnhausten re-pots his trees every sixteen or twenty-four years. The soil consists of two parts cow dung, two parts loam, three parts rotten horse dung, and three parts of the old soil from the pots. They are occasionally watered, and fresh cow dung is laid on the top of the soil, as manure. The trees are pruned in September, in preference to the pruning in Spring, by which three or four weeks are lost in their growth.—In.

ALPINE PLANTS.—Dr. Wild describes a method of growing Alpine plants, used in his garden at Cassel. On a site of 8000 square feet, he cultivates about 700 different alpine and forest plants. In five of the beds, a stratum of gravel is laid at the bottom, which is covered with peat about 2 feet thick. The rock-work is also planted with alpine plants.—In.

PASSION FLOWER.—M. Bosse approves of impregnating with the pollen of different species or varieties. In this case, they produce fruit more freely than when impregnated with their own pollen. He has, by this cross impregnation, originated several varieties.—In.

NATURAL HISTORY.

RAVAGES OF INSECTS.—No insect makes greater havock of our white-thorn hedges and apple trees than the little grey moth, *Tinea padella*, Lin. Wherever the caterpillars of this insect seat themselves, they congregate in great numbers: every spray is covered. The leaves vanish before them: so that, by midsummer, not only single trees, but whole orchards, and entire hedges, from end to end, are completely defoliated. Their depredations cease when changed into the chrysalis state; they leave the trees covered with the webs, or rather silken webs, by which they transport themselves from place to place; and every leaf is shrivelled, as if scorched by fire. The family of moths are particularly partial in their choice of food; one species affecting only one order of plants. The instinctive predilections of these little creatures have often suggested the idea, that their favourite plants might be defended from their visits by the qualities of other plants to which they are averse, as a solution of the ivy upon the apple, &c. Whatever quality be hit upon, whether vegetable or mineral, as a safeguard to plants, it ought to be administered as an ablution or wash: as such, the garden-engine or syringe might be employed with ease, and with little loss of time.

The best season for applying such wash or sprinkling is certainly the Autumn, because then the eggs of insects are laid on the bark of trees on which they breed. Another sprinkling or two in Spring, one before, and the next just after, the buds have burst, will go far to annoy and disperse the larvæ.—J. MAIN, *Gard. Mag.*

THE CUCKOO SPIT INSECT.—(*Aphrôphora spumârea*.) The frothy matter surrounding this insect is thought to be nothing else but the sap of the plant, which it has pumped up into its stomach by its snout, and afterwards ejected, so that we may easily conceive, if any plant were to be attacked by myriads of this insect, how great would be the damage it would sustain.—*Gard. Mag.*

THE ANTLER MOTH (*Cerapteryx Graminis*) is a Northern species, and occasionally the caterpillars commit sad ravages in pasture lands, by devouring the roots of grass, as related by Linnæus, who states, that they will not touch the *Alopecurus pratensis*, nor the *Trifolium pratensis*. Mr Wailes has lately made some interesting remarks upon its habits, in the 2nd part of the Entomological Magazine. I well remember when Mr Dale and myself visited Keswick, in 1827, that the grass on a large portion on one side of Skiddaw appeared dead, and I found numbers of the larvæ of *C. graminis* crawling about. I used to find the moths flying close to the ground towards sunset, in the neighbourhood of Norwich, also in meadows near Covehithe, Suffolk, and in the flowers of the ragwort at Inverary and Kinnordy, in Scotland.—*Curtis in Brit. Ent.*

DROSERA ANGLICA.—Insects settling upon the inside of the leaves are caught and retained. I have always imagined that the glands at the apex of the hairs emitted a glutinous secretion, which first held the insect, and, as it struggled, more hairs were attached, until the end of the leaf was bent down. Those who wish to see the leaf expanded should gather plants with buds promising to open the following day, and, by putting the roots in water, and placing the plant in the sun, they will accomplish their object.

PART III.

MISCELLANEOUS INTELLIGENCE.

I.—QUERIES AND ANSWERS.

CULTURE OF THE GREY EDGED AURICULAS.—To a Lover of Auriculas, p. 425, Mr. Revell is preparing an answer on the treatment of the grey edged varieties, which will be inserted shortly.

FIGURE OF A GOOSEBERRY AND CURRANT BUSH.—To J. K. an article on pruning the gooseberry is prepared by Mr Bristow, gardener to C. G. Munday, Esq., at Burton, wherein similar illustrations will be given, which will probably be inserted next month, or not later than January.

PRUNING APPLE TREES.—Being frequently asked for information respecting the pruning of standard apple trees, and not being able to give it, I have often thought of applying for your opinion. I hope you will not think it too much trouble to give me a line or two on the subject in your next number.

July 29th, 1833.

WM. CLAUGHTON.

TANNER'S BARK AS A MANURE.—I should be glad if any of your correspondents could give some information respecting tan as a manure, either for agriculture or horticulture, and say whether it is good for grass lands or no. J. K.

ENQUIRUS.—I possess a small piece of land, lying upon a steep bank on the side of a hill of Primitive serpentine, or something of that kind. The soil is a dry gravel, under which there is a substratum of strong clay at a considerable depth. On part of the land, there is a small plantation, now grown up, and hollow, consisting of larch, lime beech, mountain ash, and birch; but no grass grows on the ground, it is so dry. The part which is not planted has been very ill treated, and produces very little, it is very dry arable. Now, I want to know what ornamental plants or flowers are most likely to succeed under the trees, so as to make a covering to the ground. I have thought of the Iris, Pæony, Cistus, &c., but want your opinion; and next I want to know what to do with the unplanted part. To plant it, would, I dare say, be best with Larch or Birch, but that is inconvenient. Should I benefit it by covering it with clay, what sort of crop can I best take?—Buck-Wheat, Spring-Trainfoin, Vetches, or what? Whatever it is must be bad; but better something than nothing, if it is only to plough in. Would not the English species of Geranium or Cranes Bill grow well upon such soil?

A GRAVELLER.

Pray give us an article on the Heart's-ease. I saw, upwards of 100 sorts the other day in a nursery garden in Eaton Square. It is a beautiful flower: will it do for me or the Gravel?

WORKS ON GOOSEBERRIES, &c. ENQUIRED AFTER.—I wish to know whether it is the intention of Mr. Saul, of Lancaster, or of Mr. Muscroft, of Wincobank, to publish a work on the Gooseberry, giving their methods of propagation by seed, layers, slips, and cuttings; as also of the different methods of training, pruning, &c.; giving correct plates to each operation: on a plan similar to Maddock's *Florist's Directory*, plate 8, which operations on the laying, &c. of the Carnation are so simplified that any one who has never seen the work done, may do it himself. Mr. Saul, (I think about two years ago,) gave a wood-cut of the Lancashire method of training, in the *Gardener's Magazine*, edited by Loudon. I sincerely wish Mr. S., or Mr. M., or both, would do so, through the medium of your *Register*, as I am sure it would be truly acceptable, I might have said, truly valuable, to all and every one who wishes to cultivate this fruit to perfection. I have felt much disappointed with the following works on the above subjects, the wood-cuts being so very imperfect:—Loudon's *Encyclopedia*, Domestic Gardener's Manual, Lindley on the Orchard, &c.; the latter is the most instructive on training, pruning, &c., yet there are no plates. Doyle speaks of notching, but is not to be understood, having no cuts. Haynes is not at all satisfactory. Mr. Harrison's work on Trees would have been the most complete, had he given plates on the gooseberry and currant as he has on the apple, and other trees. If such a work be in contemplation, I am now ready to become a subscriber for five copies.

W. T.

STRIKING OF CUTTINGS.—Will the Myrtle strike best in the month of June? What time of the year is best for Fuchsias, *Lonicera flexuosa*, and *Jasamine*?

WATSON'S BEARDED RED HYBRID RHUBARB.—Where can plants be obtained?

ANTHEUM AT BRIGHTON.—I hope the promised drawing will be given, although it has now become a splendid ruin.

SEEDS.—It has been remarked, that seeds occasionally vegetate in one half the time they usually require. Is this from accidental circumstances, or may we assume that one particular period of the year is better suited than another for each sort of seed?

CHINA ROSES.—At what time of the year will the different kinds of China Roses best strike in a green-house, without using bell glasses? C. C. C. C.

ÆNOTHERA GRANDIFLORA.—Can any one of your really practical readers—one who is taught by experience—furnish the readers of the *Register* with directions for bringing the seed vessel of the *Ænothera Grandiflora* to maturity, so as to produce seeds, whereby to propagate that beautiful species? ELECTRICUS.

ROSES.—Where, in London, may the best selection of roses be purchased, and what is the distance from each other they should be planted? H. H.

ON THE NEW WAY OF GROWING EARLY POTATOES.—I have read with some interest the communication of Mancuniensis, page 338, of your last number, on "A New Way to Grow Early Potatoes," but I feel at a loss to know how the ground was formed, and how the potatoes were planted,—whether on the ridges or in the trenches, or by the side of the trenches. If the mode be so easy, cheap, and certain, as there stated, I am sure Mancunienies, yourself, or any other person, by giving in your next number, full practical directions for preparing the ground, stating the manner and time of planting, and what should be the subsequent culture, as well with respect to those planted in the open ground, or in, or against, an hot-bed, as there recommended, will be conferring a great favour on the public.

ON THE TURNIP FLY.—How is the brine prepared, and of what strength, for steeping the turnip seed, previous to sowing, and what is the time it should remain in steep, in order to protect it from the attack of the fly when it comes up, as recommended in page 375 of the same number?

ON SLUGS.—My garden is much infested with Grubs and Slugs, which of course are very destructive. Is there any better remedy than liming the land? If not, when, and in what quantities, should it be laid on, and should it be suffered to remain a short time on the surface, or be dug in immediately? AMICUS.

FORMATION OF HOT-BEDS.—I should be obliged by receiving any instruction, through your *Register*, from you or any of your correspondents, respecting the formation of hot-beds, for forcing small fruits, striking cuttings, &c. &c.

Portsmouth, September, 1833. A CONSTANT SUBSCRIBER AND AMATEUR.

WITTY'S PATENT GAS FURNACE.—I beg to offer a few remarks on the advantages said to be derived from the use of Witty's Patent Gas Furnace, as applied to horticultural purposes, having read Mr. Chanter's statement in the last number of the *Horticultural Register*, and the reports therein contained, said to be the testimonials of practical and celebrated Horticulturalists, of its general utility. However practical and celebrated they may be in horticulture, they seem to have had a small share of practical knowledge of the real use of the Gas Furnace. During the two years' experience which I have had in its application, I have found it to be of no use whatever, when applied to steam boilers; and I am borne out in this opinion by persons who have tried it. The great advantages which it is said to possess over the common furnace, are these; namely, a great saving of fuel, a better retainer of heat, requiring less labour, and entirely consuming the smoke. These, no doubt, are objects of great importance, and much to be desired, but had I found it to have possessed any of these advantages, I

should have been sorry to have urged any objection prejudicial to its general adoption. Every person who has had hot-house fires to attend in severe weather, is well aware that a sufficiency of heat can never be kept up, especially under steam boilers, by gently pushing forward the fuel, after it is coked into the grate under the boiler, as described in the methods used with the Gas Furnace. Those who wish to have the Gas Furnace applied to their forcing houses, with a view to saving fuel and consuming the smoke, would do well in the first place by consulting any candid person who may have proved the thing, and inquire of him the best and readiest way to get up a good power of steam. I dare say they would be told, that, instead of gently pushing the coal forward to the boiler, it should be thrown into the fire with a shovel, and frequently stirred up with a strong iron poker, so as to cause the flame to act as much as possible on the boiler; and while the poker is used, (which is essentially necessary for the quick generation of steam,) there will always be smoke, more or less, arising from the fire, which can never be destroyed by the use of Witty's Patent Gas Furnace.

A CONSTANT READER.

VINES IN POTS.—The numerous queries that have been inserted in your excellent *Register* on the Cultivation of Vines in Pots, and the liberal manner in which they have been answered by Mr. Stafford, encourages me to put one or two others. Mr. S., in his first letter, says, "I always renovate them, and have plants ten years of age, to all appearance as young as if they were one year old." In your note, you say, "that he puts the plants deeper in the pot each succeeding year. The whole of the old stem cannot be concealed by this, unless the plant be cut down yearly to two eyes. Mr. S. says, in his answer to *Vigornensis*, p. 186, vol. I., "I never re-pot a plant, so long as it is inclined to produce fruit," &c: What am I to understand by this? What length does Mr. S. allow his vines to sun, and how short does he cut them in at the end of the season? Does he spur or bring up a fresh shoot each year from the lowest bush? Your correspondent, G. I. T., who enlightens every subject he treats, has in a great measure answered my queries, but not entirely. I will no longer intrude, except to request that you, or some of your correspondents, would say where bone dust is to be procured? I can get plants in the North.

M. G. S.

VINES IN POTS.—It appears, at page 350, that some doubts exist as to the practicability of producing good Grapes in pots, on the part of Mr. Grey. I am not at all surprised to find that they are not generally well grown, for I have frequently seen vines growing in pots for years without producing a solitary bunch of Grapes. This I consider to be partly owing to the treatment; and I would solicit Mr. Grey to give them another trial, instead of altogether relinquishing the method. Should Mr. Grey have an opportunity of visiting Derbyshire during the next Spring, he will favour us by giving a call, either at Snelston or Wiltersley, and I doubt not but he will find from fourteen to twenty bunches upon a vine in a pot, on a system which is considered as an acquisition, since it adds further splendour to the desert. It is true, good grapes can be produced in pots, at a time when they cannot otherwise be had forced, and if they had nothing to recommend them besides being introduced into a room among other exotic plants, their novel and ornamental appearance, so early in Spring as April, (more so, if carried to table entire, as pot, plant, fruit, altogether,) they are an object not unworthy of notice, and will often vie with some of their flowery neighbours. But they are more than mere decorators, for in whatever I have had to do with them, I never found them fail to please.

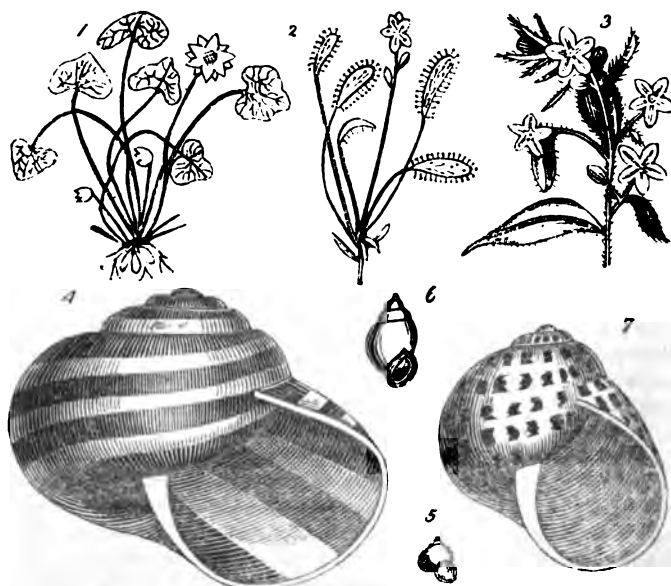
J. SMITH.

II.—NATURALIST'S CALENDAR,

OR OBSERVATIONS ON NATURE, FOR NOVEMBER.

THE figure of the *Ficaria ranunculoides* or *Ranunculus Ficaria*, given page 140, being inadvertently inserted incorrectly, see p. 329, we have given another figure (65, 1) one-fourth of the natural size which we drew from a plant now lying before us. This plant is found in meadows, bushy places, and hedge banks, thriving best under the shade of trees. The roots lie near the surface, and are sometimes laid bare by the rains. The plant is injurious to moist grass lands, where any quantity of it grows, but may be effectually destroyed by a dressing of coal or wood ashes. The flower is usually closed in wet weather. The petals are usually nine, and the sepals of the calyx three. On the bogs and moors where there is much moisture, that curious plant the *Drosera anglica* (2) may be found; it grows about six inches high, and has the remarkable property of detaining any insect that may venture to settle upon its leaves. The figure is about one-fourth of the natural size. The petals are five in number and white, the calyx consists of the same number of sepals. A little evergreen perennial plant with bright blue flowers, bearing a considerable resemblance to borage may be found more or less throughout Britain growing in waste places upon rubbish, it is the *Anchusa sempervirens* or evergreen Bugloss. It usually grows about a foot and a half high.

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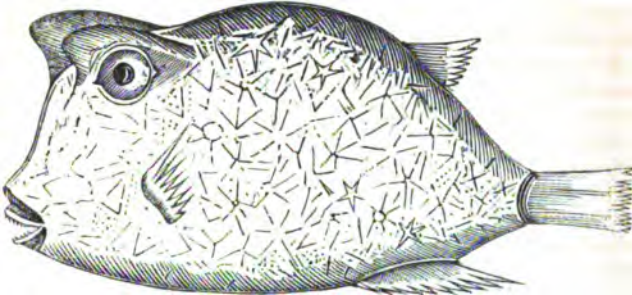


NEW SPECIES OF FISH.—The enclosed is a pen sketching of a small Fish I caught about eighteen months ago, while pleasuring in the West Indies. I did not see many of them, and was upwards of half an hour in chase of this one, as they swim uncommonly fast, and the environs being rocky, I took him several

times amongst their crevices. I at length, with the aid of a small hand-net, secured my friend in my basket. I then sat down on an approximate piece of rock, and took his dimensions and properties as follows: his extreme length that is, from the end of his tail, (as far out as I could get it, for the animal appeared to be able to draw it in or out at will) to the extremity of his upper lip measured three inches and a half, and his height from the deepest part of his venter, to the summit of the back was three inches. The horns, which are stiff and solid, were about seven-eighths of an inch long. His skin is curiously marked with stars, as in the sketch, (Fig. 66,) and in texture very similar to that

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Extreme Length $3\frac{1}{2}$ Inches, Height 3 Inches.



of the shark. The skin is of a dark brown colour, gradually becoming white towards the venter. The fins are occasionally sharp, and of the usual light colour. The eyes bright blue and quick of motion, and somewhat larger than proportion would suggest. The mouth seems formed very similar to the handle end of a pair of bellows, (the leather part) convenient for receiving small or larger particles of food. Round the edge of the mouth are twelve larger teeth very sharp, and inside them, and along the upper roof are an infinity of smaller ones, equally as destructive. The sketch is, as far as the dimensions go, I think, correct, though smaller than the one I have in my possession (dead). It is astonishing, the immense number of small fish about this size, that are to be met with in tropical climates, some of most beautiful dazzling colours, and graceful shapes, and others in the opposite extreme, of which latter class I fancy this must be the king. The front view is more hideous than the profile, and I must say when in his live state, I felt rather inclined, at times, to set him free again.

If you think this worthy of a place in your interesting *Register*, you are sincerely welcome to it, such as the sketch and description are, and I only hope you may be able to find (which I cannot do) a name for it.—WM. CLAYTON, Esq.

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COURAGE AND VITALITY OF THE SCARF.—During my stay at Johnny o' Groats, as noticed in vol. I. page 599, I witnessed a scene which afforded great diversion to the fishermen in the numerous boats crowded together at the shore. A Scarf, as it is there called,—but I have forgotten whether it was the Cormorant (*Cárlo Cormoránus*,) or the Shag, (*Phalacrocorax gráculus*,)—had got in among the boats, probably in search of food, as the bay at the time was very stormy. It frequently dived under the water when annoyed by the fishermen, and immediately upon its re-appearance at the surface, was cruelly maltreated with boat-hooks, oars, and staves, by the unfeeling and mischief-loving crowd. At length, the poor animal, after being severely beaten, tried to effect its escape, by getting out of the water on the opposite shore, where there were few or no persons. Here it scampered along the sandy beach, partly running and partly flying, with the wings extended, skipping along the surface. It was, however, pursued by a young man from one of the boats, and a regular chase ensued. The Scarf frequently eluded his pursuer by making immediate turns, when about to be taken; and this chase, backwards and forwards, lasted for a considerable time, to the great amusement of the bye-standers. The poor bird was at length taken, but even then it did not lose its courage, for it immediately gave battle to its capturer, and cut him dreadfully on the back part of his right hand. The Scarf was now secured from offering any more retaliation, by holding the neck tightly close to the head; and it was then brought over to the shore where I was standing, and where a cooper was at work on the beach. The unfortunate animal's head was laid upon the block and chopped off with the adze, leaving about an inch and a half attached to it. The body was suspended on a nail in front of a house, and the head was thrown down to the water side: the body and head were then about sixty yards apart. I immediately followed the head, and perceived that life was not yet extinct. The mandibles opened and shut, as if gasping for breath. In order to retard the flight of the remaining spark of life so rapidly winging its way, I pushed a herring-head towards them with a small cane I had in my hand. This they firmly grasped, as if, in the last agonies of death, to be revenged of that direful foe who had brought the body to an untimely death. I then removed the herring-head and put the cane between the mandibles; this they also grasped firmly, so much so, that I held the head up in the air by the cane for a considerable time; but, alas! the last expiring breath was drawn!—the mandibles let go their hold, and the head fell to the ground. It was about seven or eight minutes after the head was taken off before life seemed to have completely fled. Perhaps some of your intelligent correspondents, who are acquainted with the habits of this aquatic bird, will be kind enough to say, if this tenacious vitality is common to all the birds of this tribe.

THE BRICKLAYER'S LABOURER.

MOLLUSCOUS ANIMALS.—The *Helix pomatia* (4) Turton says may be found in chalky and gravelly counties. The shell is two inches long, and as much high, rather solid, of a whitish colour, or pale tawny, with usually four darker banes: the inside is of a pale violet brown. In winter the mouth is closed by a thin calcareous lid, which, however, is not attached to the inhabitant; upon the approach of summer this lid is dissolved by means of a phosphorous acid which the animal at this season abundantly secretes. After the animal has been extracted there remains at the bottom of the shell a glaring transparent matter, which affords one of the best and most durable cements in nature, resisting every

degree of heat and moisture. From the time of the Romans who fattened these animals as an article of food, they have been eaten by various European nations, dressed in various ways. At one period it seems they were admitted at our tables, after being boiled first in spring water, and then seasoned with oil, salt, and pepper. But the Romans took great pains in rearing these snails. They kept them in sties called *cochlearia*, which were generally constructed under rocks or eminences, moistened by a passing stream. If, however, the sty was not sufficiently humid, a water-pipe, bored full of holes, like a watering-pot, was introduced, by which means it was continually sprinkled and kept in a favourable state. Here the snails required little attendance or food, but when it was wished to fatten them, they were fed on bran and sodden wine. It has been thought these animals were introduced about the middle of the sixteenth century, but Dr. Turton considers them as indigenous. It is probable that this is the species mentioned by Sallust so instrumental in the capture of the castle near the river Malaga in Spain, and which effected the termination of the Jugurthian war. This castle was besieged by Marius the Roman General, who, from its strength and resistance began to despair of reducing it. One Ligus, a mercenary of the army, wandering to procure water from the camp to the foot of the castle, found some snails crawling among the rocks; and having gathered first one, then another, and anxious to get more, was by little and little conducted to the summit of the mountain, at the back of the castle, by a rugged and unknown path. Perceiving the enemy busied in defending themselves in the front of the castle, with their backs towards him, Ligus stole down undiscovered, and informing his general of the circumstance, Marius sent a chosen band under the guidance of Ligus by the same path, who rushing unexpectedly on the besieged, shortly took the castle. The *Valvata obtusa* (5) is not a common shell, but may occasionally be found in ponds and canals, it is about a quarter of an inch long and as much broad, and of a light horn colour, having the mouth also closed with a lid. In similar situations to the last, and more common, may be found the *Paludina impura* (6). This shell is about half an inch long, and three-tenths wide, of a yellowish horn-colour, but often covered with a blackish foul coat. This also possesses a lid. A very common and destructive snail the *Helix aspersa* (7) may be found in almost all gardens under thick hedges, and about old walls, when, during the winter, they cling to each other in large clusters. The shell is an inch and a half in diameter, of a dull olive colour, with generally four interrupted brown bands, one and rarely two of them penetrating the mouth, it is covered with a creased or coarsely wrinkled skin, by which it may be readily known.

BIRDS.—The preparing of a collection of specimens being one of the most seductive modes of fostering a taste for natural history, it appears of importance to facilitate as much as possible the formation of museums. Birds are too often rejected as not worth preserving, from being bloody or otherwise soiled; but they can be perfectly restored to purity of plumage in the following manner. Having mounted the bird in the attitude designed, wash the soiled parts gently in the direction of the feathers, with a sponge and cold soft water, which if carefully performed, will not discompose the plumage. Then having made a mixture of raw-starch and cold water, of the consistency of thin mortar, lay a coat of it about the eighth of an inch thick over the parts to be cleansed, and in about twenty-four hours, when it is dry, it may be removed by a few taps of the

finger, and will carry with it the blood or other soiling which it was sought to remove. The same method has been tried on birds many years mounted with great advantage, and even stains produced in performing the operation after stuffing, may be easily removed in a similar manner.—*Field Nat. Mag.*

INSECTS.—The true Carabi or Ground Beetles possess a very remarkable power, for when pursued and alarmed they are able to spirt from the apex of the abdomen an excessively acrid, and gaseous fluid, which occasions a very severe pricking sensation when it falls on the skin, but the pain is of short duration.

Genus Elopheus.—These beetles inhabit ditches and ponds, they are to be found basking in the sun upon aquatic plants, walking by the water's edge, frequently upon the surface, and sometimes floating on their backs; they are also met with flying, both in the heat of the day, and in the evening.

Genus Volucella.—The larvæ of these flies inhabit the nests of humble-bees, devouring the larvæ and pupæ of the bees. They so nearly resemble the bees both in shape and colour, that they are able to enter in and deposit their eggs undiscovered.

The Mole-cricket is one of the largest insects to be found inhabiting Britain; its structure is wonderful, and its economy most interesting. In its perfect state, it is capable of flight, and probably of swimming also. Its forepaws are beautifully adapted for burrowing in the ground, and their power is prodigious. According to Roesel, it commonly employs a force equal to the counterpoise of 2 or 3 pounds; having a large tooth at the base of the anterior thighs, which meets the interior margin of the tibia when bent back, and this receiving and protecting the tarsus in the act of digging and burrowing, altogether forms a large toothed sort of hoe or shovel; they are able to run backward as well as forward, in their burrows with great facility. To apprise them of approaching danger, when going backwards, they are furnished behind with two appendages similar to their antennæ, but not jointed. They live about a year, and are found in gardens, meadows, peat bogs, &c. they feed upon potatoes, and the roots of grass and corn. Dr. Kidd says they prefer raw meat, and will attack each other, and that the victor devours the flesh of the vanquished; but they can live nine or ten months without food! This insect has been supposed to be "Will o the wisp," about which so much has been said and so little proved, the phantom that has eluded the vigilance of the naturalist and the curious for ages.

METEOROLOGICAL APPEARANCES.—On Tuesday, September 17th, there was a beautiful lunar Rainbow seen about eight o'clock in the evening, towards the north; about one of the same night the Aurora Borealis could be observed beautifully shooting up its streaming lights, and about seven the next morning a mock sun was observed on the south side of the sun. What these appearances predict I cannot tell. J. K.

III.—SOCIETIES.

CONNECTED WITH HORTICULTURE AND NATURAL HISTORY.

LONDON HORTICULTURAL SOCIETY.

THE September Meetings were held on the 3rd and 17th of the month. The principal articles of interest observed were a very beautiful seedling *Mimulus*, a species of *Canna indica* raised from seed 30 years old, a new seedling *Shallot*, *Wheatear Carnations*, *Hydrangea guercifolia*, *Cassia lævigata* and *frondosa*, and *Rosa berberifolia* grafted on *Fraser's Noisette*. There were also numerous species and varieties of the other plants of the season. Among the fruits, the *Elruge Nectarine*, the *Noblesse*, *Barrington*, *Bellegard*, *Royal George*, and *Geo. IV.* peaches were prominent. The collections of apples from Mr. Kirke, Mr. Hooker, and the Society's garden, were extremely handsome and extensive. Those from the latter establishment included a great many of the varieties of excellence and rarity, for which it is so justly famed. The specimens of the *Gravenstein* apple were found very good, but much smaller this year than usual, on account of the long drought which was so prevalent. A letter from the author of the *Domestic Gardeners' Manual* was read, communicating the result of some further experiments on the effect of water on the *Melon* plant.

THE Meetings for October took place, as usual, on the 1st and 3d Tuesdays in the month. The show of *Dahlias* was very beautiful; but the greatest supply was on the 1st. The contributions from the choice and well-known stores of *Chandler*, *Veitch*, *Dennis*, *Hogg*, &c., displayed to great advantage the good taste manifested in their selections. We also especially observed a new *Yellow Dwarf Dahlia* from Mr. Brown, of *Slough*. It possessed unusual elegance; the flowers appearing just above the foliage, nearly erect, with stems remarkable for their strength. The collections of other flowers contained fine specimens of the *Amaryllis Belladonna*, *Eulophia Macrostachya*, *Gloriosa Superba*, and other inhabitants of the stove and green-house, in bloom at this period.

Gratification for the palate as well as for the eye was provided, in the shape of an excellent *Queen pine* apple, ($4\frac{1}{2}$ lbs. weight,) grapes, &c., from *H. J. Grant, Esq.*; a seedling pine apple, from *Mr. R. Buck*; and pomegranates, from *Mrs. Marryate*. The varieties of apple and pear were most abundant. The Society's garden yielded the greater portion of them. The difference in favour of the *Duchesse d'Angoulême* pear, grown on a thorn stock, as an open dwarf, attracted attention, as did the first rate qualities of a little known sort, called the *Comte de Lamy*. A good and valuable variety of plum, entitled, *Coe's fine late Red*, was brought to notice; its lateness exceeding that of the *Imperatrice* by a month. A new kind of *Canada Gourd*, a piece of *Bamboo* of a magnitude seldom seen in this country, and several minor subjects of interest, were also on the tables.

TAUNTON AND WEST SOMERSET HORTICULTURAL EXHIBITION.

THE third exhibition this year took place last Wednesday in this town, at the Assembly Room. The supplies of specimens of every description were abundant. Grapes, pines, melons, peaches, apricots, plums, nectarines, and mulberries, profusely decorated the tables, and furnished ample evidence of the grateful powers of vegetation, when duly promoted by superintending skill and scientific labour. The shrubs and flowers displayed on the occasion were of great beauty and elegant variety; and the culinary vegetables were of extraordinary size. The company which was numerous and highly respectable, were admitted to the room at two o'clock, and the exhibition closed at five, when a sale of the prize fruit and vegetables took place; most of the articles met ready purchasers, and the whole fetched upwards of £4 exclusive of pines, £16 were received for admission at the door. The arrangements, for the display of the very numerous articles shewn on the occasion were highly judicious, and the scene was as splendid and varied as it was delightful.

YORK FLORAL AND HORTICULTURAL SOCIETY.

The Autumn meeting of this Society was held on Sept. 25th, in the Guildhall, and we were highly gratified by the very splendid show of flowers, fruits, and vegetables, which was equal to any we have ever seen, particularly when the late season of the year is considered. On entering the hall, a beautiful arch of flowers presented itself, erected over the President's Chair,—and containing most of the varieties now in bloom. It was surmounted by a shield of flowers,—surrounded with the motto—"Honi soit qui mal y pense: and a crown for a crest. This very splendid ornament was furnished by Mr. Clarkson and was much admired. By its side, rose a lofty pyramid of flowers, the contribution of Mr. Wood, gardener to Messrs. Backhouse. This was rich in the floral varieties of the season. On the left of the Chairman, the centre window of the hall was adorned with a very handsome bouquet, sent by Mrs. Rigg. It was in shape like a pointed arch, with projecting spirals, like the points of a star, and had a very novel and pleasing appearance. Several smaller bouquets were placed in the various parts of the room. A number of stove and greenhouse plants, in blossom, occupied a table on the left of the Chairman. The centre table was filled with specimens of that beautiful tribe of flowers, the Dahlia; and tables on the right of the Chairman were covered with a profusion of vegetables and fruits. The prize flowers and fruits, covered a table in front of the Chairman; and the prize vegetables filled two tables at the other extremity of the hall. Mr. Clarkson, in addition to his bouquet, sent a basket of pansies, very tastefully arranged. A basket of Dahlias, containing a great many most beautiful varieties, sent by Mrs. Holmes, of Fulford, was also much admired; as were a collection of balsams, furnished by Messrs. Backhouse, and which ornamented the tribune or forum, used by the Commoners, at their meetings. Amongst the vegetables, some remarkably fine endive, vegetable marrow, and beet root, sent by the Right Hon. the Lord Mayor, attracted much attention. There were two cabbages, of the drum-head sort, of an extraordinary size, weighing about two stone each;—and the prize vegetables generally were of the finest description.

LANCASTER FLORAL AND HORTICULTURAL SOCIETY.

THE Lancaster Floral and Horticultural Society held their extra meeting for the show of Dahlias and Fruit in the National School Room, on Wednesday last. Notwithstanding the unfavourable weather of Monday & Tuesday, some very fine specimens of Dahlias were exhibited; they were arranged into five classes and judged accordingly. The fruit, particularly apples, was so various and numerous as to induce the Committee to abandon all attempts to arrange it. We noticed not less than fifty-two different specimens of apples sent by the Patron of the Society—the Rev. T. Mackreth, all grown in his grounds, at Halton, they comprised all the new and most excellent kinds, and such as many persons feared could not be grown in this northern climate. We noticed that delicious little pear, the Seckle—one of the very best of the American varieties. A short account was given by this gentleman of the respective properties of each specimen; a very useful plan, which we were glad to see adapted by others, particularly Mr. Matthias Saul, who exhibited upwards of forty different sorts of apples, grown in his own orchard at Skerton, all of the newest and best kind; Beurré d'Arreberg and the Beurré Rance—two of the best pears of this, or perhaps any other country. The exertions of this individual to introduce good fruit into this neighbourhood is deserving of great praise. We understand it is his intention to offer cuttings of any of his apples or pears for sale at very moderate prices; this will afford an opportunity to others of cultivating the most approved kinds. Very fine specimens of the Gisel Bergamot, the Brown Buerre, and the Chaumontel pears were sent from Ashton Hall; the Committee, no doubt, feel grateful to the Countess of Lincoln for the encouragement thus given to the Society. Some very fine specimens of apples were sent by Mr. Eidsforth, of Poulton Hall, Mr. Salthouse of Scotforth, &c. &c. and a plate of the finest Nonpareil we ever saw were grown in Dalton-square, in this town, in the garden of Mr. Eastwood. Mr. Walmsley was commissioned by the Society to select specimens of the different kinds of apples sold in the Lancaster market, and he produced between twenty and thirty sorts, all very large and fine in appearance, but many of them we think were not of much value. Mr. S. Hinde exhibited half a dozen apples of the Easter Pippin that had been gathered in his garden in November, 1832, in a very high state of preservation; this is a very valuable kitchen apple; and fine and curious specimens of different kinds of potatoes, such as are grown at Algiers, on the Rhine, and in France, were shown by Mr. Knowlys, of Heysham: we cannot speak as to their respective merits—they were described as very productive, and we have no doubt the owner, to whom this neighbourhood is greatly indebted for the introduction of many new and excellent kinds of vegetables, will inform the public if they should be found to bear the severities of this climate. We omitted to mention in its proper place two stands of beautiful flowers, arranged very tastefully, and consisting of all the different kinds of new annuals and other autumnal border flowers; they were, we understand, from the garden of the Rev. T. Mackreth. A specimen of the new Greenhouse Plant *Tropeolum tricoloratum* we also observed, it was the property of Mrs. Wm. Hinde.

IV.—MONTHLY HORTICULTURAL CALENDAR.

FOR NOVEMBER.

FRUIT DEPARTMENT.

Apples.—Make use of every fine day to gather any late sorts that may hang on the trees. Lay a little litter or half-rotten horse-dung about the roots of the trees which were removed last month.

Apricot Trees should now have some of the shreds drawn from the smaller branches, after the manner of peaches.

Cherry Trees may now be pruned, and have their winter dressing, if subject to the attacks of the black fly; see p. 264.

Gooseberry and Currant Trees may also be pruned; leave a good supply of young wood, p. 253. If the land in which they grow be strong, give them a manuring of light fresh mould and horse-dung; if light, of fresh soil and cow-dung.

Grapes.—Vines in Pots now brought into the Vinery, will ripen their fruit in April.

Peaches and Nectarine Trees on the walls having now cast their leaves, should have all the nails drawn from the smaller branches, but keeping the strong branches fast nailed, or the trees are liable to be broken.

Planting may still be performed at the beginning of the month, if all the leaves have not fallen, otherwise it may cease until March.

Raspberries in Pots for forcing may now be introduced into the forcing-houses. The first crops, however, invariably set better, if the pots are placed in a hotbed made for the purpose and covered with a frame.

Strawberries in Pots for forcing may now be introduced into the forcing houses. The first crops, however, invariably set better, if the pots are placed on a hotbed made for the purpose, and covered with a frame.

FLOWER DEPARTMENT.

American Plants in exposed situations, if the winds be very cutting, should have a few lath-branches stuck about them to protect them.

Auriculas, be careful not to overwater them; give plenty of air; and preserve them from injury by frost, page 468.

Camellias may be introduced into the vinery, &c. as they are wanted to bloom; care, however, must be taken not to give them a greater heat than 60 degrees by day, and something less by night.

Chrysanthemums in Pots, will require abundance of air to prevent the flowers from expanding weakly.

Calceolarias, cut down as recommended page 267, will now be in full blow; keep them in a cool airy situation in the greenhouse.

Dahlias will now require taking up; choose a dry, windy day for the purpose, shake off the soil carefully, so as not to twist the roots, and place them in an airy shed until perfectly dry.

Greenhouse Plants must receive no water this month, unless when the soil in the pots becomes quite dry; be also careful during this month that none falls on the leaves, for if they become wet, they will be liable to damp off. Give abundance of air, whenever the weather will permit.

Forcing.—About the end of the month Rhododendrons, Pinks, &c. &c. may be introduced into a gradual heat, see p. 212.

Mignonette, in Pots, must be well sheltered from frost, and have very little water, which, when required, should always be given on a clear day, and in the morning.

Hyacinths should be planted; see Calendar for October.

Roses in Pots, now brought into the forcing-house, produce flowers in January.

Ranunculuses, now planted in frames, will flower in March and April. Prepare beds for planting out of doors in March.

Ten-Week-Stocks sown in September must have plenty of air and little water, and be well preserved from frost.

Tulips may now be planted, and seed sown in pans or boxes,

VEGETABLE DEPARTMENT.

Asparagus should now have its winter dressing. Also strong roots should be taken up and planted on a slight hotbed towards the end.

Cauliflowers fit for use, if not destroyed by the frosts of October, may be dug up, and taken to a shed or cellar, and laid in, or hung up. Give plenty of air to those in frames, &c.

Endive must also be taken up when the frost begins to be severe, and be blanched in a shed or cellar.

Lettuce Plants may still be pricked out in frames, if enough were not done last month.

Radishes now sown on a hotbed will come into use in January and February.

Sea-Cale should be covered with pots, and dung for blanching; see p. 440.

Herbs in Pots, as mint, &c. should now be placed in the forcing-houses.

Rhubarb Roots may be taken up towards the end and plunged in old bark in a frame placed in the forcing-house; see p. 157.

Peas and Beans may be sown this month, in favourable situations, for an early crop.

THE HORTICULTURAL REGISTER.

DECEMBER 1ST, 1833.

PART I, ORIGINAL COMMUNICATIONS.

ARTICLE I, COLLECTIONS AND RECOLLECTIONS.

BEST TIMES FOR REMOVING LAURELS, &c.—Evergreens, if taken up carefully, may be planted with success at all seasons. About eight years ago, I superintended the planting of some very large ones, consisting of Portugal, and Common Laurels, Cedars, &c. in the month of July, when the weather was very dry, at Sulby Hall, Northamptonshire, the seat of Geo. Payne, Esq. which did remarkably well. If, however, the situation be dry, and the soil light and sandy, they will in general, with the exception of hollies, do best, if planted in November or December, providing the weather be mild. On the other hand, if the soil be low and retentive of moisture, they thrive best if planted in May. In both cases, it is indispensably necessary, that all large plants be taken up with large balls, the roots being as little damaged as possible. S. H.

ADVANTAGES OF PRUNING FOREST TREES.—To illustrate the advantages of *early* and *Annual Pruning*, I have transmitted for your *Register*, an account of trees planted in the parish of Llanarmon, in the winter of 1804-5, and which were measured November, 1832, one foot from the ground, when the circumference of the oak was two feet eleven inches, Sycamore three feet eight inches, Beech

three feet nine inches, Elm three feet ten inches, Ash three feet eleven inches, Italian Poplar four feet two inches, Larch four feet eight inches. The average girth of the same trees was from one foot high to

15 Feet,.....Oak,.....	21 inches.
18 Feet,.....Ash,.....	26 inches.
10 Feet,.....Beech,	27 inches.
15 Feet,.....Sycamore.....	30 inches.
12 Feet,.....Elm,.....	32 inches.
20 Feet,.....Larch,	39 inches.
14 Feet,.....Scotch Fir, ...	44 inches.
20 Feet,.....Italian Poplar,	44 inches.

J. HUGHES.

This Article was inserted page 308, but owing to one of the measurements being mistaken for height instead of circumference, the meaning of the writer was not conveyed.

J. P.

WEeping TREES.—Mr. William Anderson, Curator of the Botanic Garden at Chelsea, writes as follows to the Prussian Gardening Society. Fascicles or bundles of shoots are often observed on trees, which resemble a bird's nest at a distance; but, when examined, they prove to be a cluster of small twigs. Such bundles are observed on different trees, but more frequently on the white or common birch tree. In the year 1808, I observed such a bundle on a *Cratægus* (*Méspilus*) *Oxyacantha*, (hawthorn) and grafted young thorns with them, which, in two or three years, produced beautiful weeping branches. About the same time, I observed such a bundle on *Ulmus campestris*, (common elm) eyes of which were budded on healthy young trees, and every one produced a long hanging shoot. According to this observation, it would be very easy to produce a large collection of drooping or weeping trees. Our gardeners, however, multiply no species so numerous as the *Fraxinus excelsor var pèndula* (weeping ash); which variety often retains its hanging character when raised from seeds. We possess several such trees, of about ten feet in height, which were raised from seed of the original tree, obtained in 1780, from a nurseryman, who found it a few years previous to that, in the neighbourhood of Newmarket, in Cambridgeshire.

HOW TO DESTROY EARWIGS.—Being similarly circumstanced with your correspondent W. G., I was pleased with the simple, and I have no doubt, efficacious plan of an amateur florist, who destroyed Earwigs by taking a piece of coarse paper, folding it round two or three plies and pinning it at the top, thus forming a cap to fit the top of the Dahlia stake loosely, leaving room for the earwigs to creep up

and secret themselves after their evening depredations. He then goes round in the morning, takes off the cap, shakes them out in great quantities, and thus destroys them. A.

Essex, Oct. 22, 1833.

CULTURE OF THUNBERGIA ALATA.—Plants raised from seeds are preferable, when seed can be obtained, for they grow stronger and survive the winter better than those raised from cuttings. But in case the plants do not produce seed, cuttings should be struck from the earliest shoots in the spring, and they should be sparingly watered in the winter and spring months, until they begin to push vigorously. The soil should be light and rich; and the plants regularly syringed over the leaves, to check the red spider, to which they are very subject. Water heated to about 120 degrees Fahr. will kill them with greater certainty than when cold. They succeed best in the stove, but will thrive in a warm greenhouse.

CULTURE OF KENNEDIA RUBICUNDA.—This plant should be potted in a mixture of sandy loam and peat. It requires moderate watering, that is, it should never be allowed to become very dry, and if on the other hand too much water be given, the plant will be sickly and the soil be covered with moss, which ought never to be allowed to grow. It is a creeper of the easiest culture, and will grow in almost any situation in an airy greenhouse; but New Holland plants will not thrive in heat. A healthy plant would derive benefit from being set in a shady situation out of doors, during the summer months, but a sickly one would not.

TREATMENT OF VINES.—As the treatment of Vines has lately formed a prominent topic in your valuable publication, permit me, for the information of your readers, to state the plan I have adopted for obtaining early grapes, of a large size and fine flavour.

About six years ago, I planted a black Hambro' vine against a wall with a south-east aspect, and in about four years it not only covered the wall, but also the tiled roof of my next door neighbour's out-house, notwithstanding it was very closely pruned every year. Two years ago, I built a small green house in front of this vine twelve feet long, four feet wide, and eight feet high. I bring from the roof of the out-house, each year, as much new wood as will fill the same, at one foot distance from each branch, with about three buds on each. I heat the same by laying half a load of fresh dung on the floor twice each season, from which I obtain not only heat but moisture. For the nourishment of the roots, I occasionally stop up a drain in front of the green house, especially in hot weather. The result of my experiment for the last two years is about 60 lbs. of

very fine grapes yearly, which become fully ripe by the latter end of August, and which I readily dispose of at two shillings and sixpence per lb.

T. WOOD.

VIGORNIENSIS wishes to express his thanks to the Author of the Domestic Gardeners' Manual, for his obliging notice of his papers addressed to the *Horticultural Register*. He agrees with him generally, as to the advantage of training the Persian melon on Mr. Knight's plan, but prefers planting in the soil of the bed. He had a single plant of the Red Fleshed Hoosainee, this year, trained in the recumbent manner, which brought five fruit to perfection, the smallest of which was above three pounds, others four pounds, and the largest five pounds and a half. With respect to the still controverted subject of the culture of the vine in pots, Vigorniensis is resolved to give it a fair trial. He much fears, notwithstanding the undoubted success of Mr. Stafford and others, that the system will not prosper to the extent anticipated. Mr. Grey informs us, that he has tried it for some years, and, as it should seem, with care and judgment, but he has failed. Vigorniensis thinks there are three objections to its ever becoming a general practice. In the first place, too much room is required to prepare the plants, especially if they be only fruited every alternate year, as Mr. Stafford in his last paper recommends. Secondly, considerable skill is requisite to bring the plants into a state of rest for a regular *succession* of supply. Thirdly, the state of the grapes advancing to maturity, or half swelled, would render it hazardous to lower the temperature so far as to suit the introduction of fresh plants. There is an observation in page 168 of the Domestic Gardeners' Manual which is worthy the attention of those who write for the instruction of novices in this or any other art. The author observes, "it is to be lamented that persons who aim at diffusing elementary instruction should fail in rendering their communications intelligible. Elementary information can only be effectually conveyed when *every particular communicated* is rendered perfectly free from ambiguity." This, though an obvious remark, is certainly not attended to as it should be. The consequence of which is that the most valuable results of experience are often involved in difficulties which perplex the mind of the enquirer, and render the pursuits of science tedious and discouraging. Can grafts be obtained of the cherries figured in a former number? Also of the Bon-Chrétien Fondant and Easter Beurré Pears? Also of the large Germek Persian Melon Seeds?

Worcester, October 23rd, 1833.

ARTICLE II.—ANSWERS TO QUERIES.

To *ADOLESCENS*, page 330.—*Dahlia*s succeed very well when planted at once into the borders, if it be done after the frosts are over.

To A. B. page 90.—We have tried many methods, but we find none more simple and efficacious than carefully to place the fruit when dry in earthen jars, without any packing, and to cover the tops of the jars with bladder. The jars are then set in a cool dry room, where they can be but little affected by atmospheric changes. *Page* 188. The small poles of Scotch fir might be used for rails, but they are far from being strong. Perhaps the best use to which they could be applied, would be to convert them into charcoal.

To A GRAVELLER, page 517.—An article on the Heartsease is partly prepared, but the answers to the other subjects on which he enquires must be deferred for want of room.

To C. C. C. C. page 89.—A paper on mixing soils will shortly appear, page 517-18. Cuttings of myrtles will strike very well in May or June; perhaps better than at any other time. *Fuchsias* are propagated with little trouble in spring. As soon as the young shoots are an inch and a half long, pull them off, and plant them in a pot filled with peat, sand and leaf-mould, and let the pots be placed in a warm situation. They will also grow very well in autumn, from cuttings of ripened wood, but they require a much longer period than the former to strike. Both the *Lonicera* and *Jasmine* will grow freely, if ripened cuttings be planted in August or September. Also in spring, provided the previous summer's wood be made use of.—The suggestion in the query on the vegetation of seeds is correct. *China Roses* will strike in the spring without glasses, with the greatest freedom; and there is in autumn but little difficulty attending their propagation.

To *AMICUS*, page 518.—Throwing lime upon the land, or digging it in, will effect little towards the destruction of slugs, unless the operation be performed when the snails are on the surface. If ground much infested with slugs be lightly covered over with good quicklime, at ten o'clock at night, and about three or four o'clock in the morning, in still fine weather, and the operation be repeated for a few times, most if not all the slugs will be destroyed. See Vol. 1, p. 166. The brine for soaking the turnip seeds may be readily prepared by mixing a quantity of salt in water; the seeds should be soaked about three hours; see page 376. But we beg to be understood that we do not give this last advice from our own knowledge, having never made the experiment.

To E. W. N. page 283.—The Skinless Oats can be purchased at almost any of the seed-shops about London. We cannot tell what is the price.

To G. S. SOMERSETT, page 89.—The fact is not very common, because peaches raised from seeds are not to be depended on, nor will they grow with the same freedom as when grafted or budded on plum-stocks. If a cultivator wishes to preserve a good sort, he must graft or bud.

To FLOS, page 473.—A brick pit would undoubtedly be best for preserving greenhouse plants in winter, but a common frame would do, if the plants be well secured by mats, &c. from the severity of the weather, as stated Vol. 1, page 577.

To H. H. —Messrs. Young's of Epsom, and Messrs. Lee, at Hammersmith, have very good collections of roses. With regard to the distance they should be planted from each other, we would say, if for a border, four feet from plant to plant in the rows, and three feet from row to row, placing the plants triangular.

To H. L. T. page 138.—We believe Arthur has an article in preparation on Irideæ, which, we understand, will appear shortly.

To M. page 234.—In the course of another season, we hope to be able to give the results of some experiments with regard to changing the colour of Hydrangeas, and thereby set the matter at rest.

To W. CLAUGHTON, page 516.—Apple-Trees in orchards require but little pruning. After they are planted, the shoots will require cutting in, and then nothing more is necessary than to cut out any branches which may have a tendency to injure the figure of the head, or are likely to become stronger than the rest, as well as such as cross or intersect each other so as to rub in a time of wind.

ARTICLE III.—NATURALIST'S CALENDAR,

OR

OBSERVATIONS ON NATURE FOR DECEMBER.

IN pastures, the *Hesperis inodora*, or Scentless Rocket (Fig. 68, 1) may be found. The flowers are pink colour and rather handsome; it does not blow now, but at midsummer. In salt water ditches, the *Ruppia maritima*, or Tassel Pond Weed (2) flowers until September, or October. The flower stalk of this plant, like that of *Vallisneria*, is spiral, and relaxes or contracts itself according to the depth of water in which it grows. There may also be seen on the sea coast, the

Atriplex portulacoides, or Shrubby Sea Purslane (3). The whole plant wears a bluish green aspect. In waste grounds, and by roadsides, grows the *Cynoglossum officinale*, or Common Hounds-Tongue. (4) It grows about two feet high, and bears red flowers; it has a smell like mice, and is disliked by cattle.

VEGETABLE PECULIARITIES.—In the temperate zone, those trees which change their foliage with the seasons, shedding their leaves as the winter comes on, and standing with bare branches through a succession of weeks, if hard and solid timber trees, are notoriously of slow growth, and require years, in some cases ages, to mature the texture of their fibres. This is the case with *oaks* and *elms*. Where, however, vegetation is never checked by hybernation, as in most trees of the tropics, and in the evergreens of temperate climates, woods may be of quick growth, and have all the characters of durability, weight, and compactness. The *Acacia batriaehonda*, which yields a more solid and durable timber than any European tree, arrives at maturity in fifteen or twenty years, and is never leafless, whilst the *Ceiba*, or silk-cotton tree (*Bombax pentandra*), a very giant of the forest, and the gomier (*Busera gummifera*) a tree of good size and bulk, showing their golden foliage every year, are the softest of all tropical woods used for domestic or constructive purposes. The one is scooped into canoes, for which its large growth and light texture admirably adapt it; the other is formed into bowls and small gamelles, for which its facility of being worked, and its clean whiteness render it highly suitable. The dye woods, which are all woods of hard flinty growth, suffering no hybernation, are of rapid growth. Such are the logwood, (*Hematoxylum Campechianum*), the fustic (*Morus tinctoria*) and the brazilletto (*Cæsalpinia vesicaria*), &c. but the balsamiferous, or resinous trees, though they do not cast their leaves, are comparatively slow growers.—*F. N. Magazine*.

CHARA VULGARIS.—The best way to obtain a view of the circulation of the sap, is to rub a piece of the plant gently with a wet bit of leather, and this will take off some of the incrustations of dirt and lime with which this plant is usually invested, and which renders it opaque, and injures it very much as a microscopic object; the rubbing will render it sufficiently transparent. A piece of the plant, about half or three quarters of an inch long, should then be put between two pieces of glass, with a little water, but without being pressed so as to bruise the plant. It is then fixed before a candle so as no light can be seen but what comes through the stem of the plant. If the plant be pretty free from dirt, the sap will be seen ascending along the middle of the stem, and descending at the side.

It has much the same appearance as the circulation of the blood, but the globules are much fewer in number, and larger. It may be found rather difficult at first to obtain a good view of it, but it well repays the trouble attending it.

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MOLLYSCOUS ANIMALS. The *Mysca solida* (5) is said by Turton, to be found in the river Avon, near Bristol. The shell is stated to be two inches long, and three and a half broad, covered with a blackish brown skin. The *Cyclas amnica* (6) inhabits slow rivers and streams, in most parts of the country. The shell is three-eighths of an inch broad, brownish or bluish horn colour, sometimes yellow towards the margin, produced and narrower on one side, often covered with a rusty coat. The *C. appendiculata* (7) is about half the size of the last, and is found in similar situations, but is very rare. The *Clausilia biplicata* (8) inhabits woods and close hedges. The shell is nearly three quarters of an inch long, of a dark grey colour, and consisting of eleven or twelve rather flat but well defined volutions. Also in beech woods, among decayed leaves, the *C. laminata* (9) shelters. This shell is about half an inch long, and of a reddish horn colour.

THE MUSK OX has many striking peculiarities which appear to give it an alliance to the goat rather than the ox. The singular secretion of musk, which so strongly pervades and taints its flesh, particularly the heart and kidneys, not only indicates a similarity in secretory organs with the species of deer which yields that drug, but may, from these circumstances, lead to a reasonable inferential con-

jecture, that the concrete substances both of musk and civet, and, perhaps, ambergris, may owe their origin to the action of some secretory ducts connected with the heart and kidneys of the animals which produce them. The silky texture of its hair, again nearly resembles that of the cashmere goat, while its habitation on the tops of the mountains, its facility in running, and its dexterity in climbing rocks, are all indicative rather of the goat than the ox. The identity, however, of general figure and size will warrant the naturalist in placing it in the bovine tribe.—*Field Nat. Mag.*

BIRDS.—On a voyage from London, northward, on the 16th of September, a correspondent to the *Field Naturalist Magazine* throws some new light on the migrations of birds. "When off the coast of Yorkshire, about ten or twelve miles from Redcliff, tree pipets, willow wrens, whinchats, and a single female redstart settled on the vessel. On the 17th, some wheatears, robins, and one male stonechat, made their appearance. These all left the vessel on the first night after their appearance, excepting two robins, which remained for some time, being fed by the passengers. The robin is constantly migratory in all parts of the continent, and in the Orkney and Shetland Isles, but stationary throughout Britain. On returning southward, however, the greatest number of species was seen. When off Whitby, about fourteen miles from land, on the 7th of October, a flock of golden crested wrens settled on the ship's tackle; the little creatures, being much exhausted, suffered themselves to be taken by the hand; as did also a solitary chiff-chaff, which, together with nine gold crests, it was attempted to bring alive to London; but they all died on the passage. On the same day, two female chaffinches, two song-thrushes, some field-fares, starlings, and tree-pipits, alighted on the vessel, many of which were taken alive. An eve-jar also followed the ship for some time, and settled more than once upon the bowsprit. A woodcock likewise flew about the vessel for some time this day, and alighted twice on the deck. October 8th, a flock of ten sparrows settled on the ship, and others of this species continued to arrive during the whole day, as the vessel passed the Norfolk and Suffolk coast, particularly when off Haisborough, Yarmouth, and Harwich. Their numbers increased at length to upwards of a hundred, and they remained on board until the vessel almost entered the Thames. They appeared to arrive from the English coast, but the exact direction from which they came cannot be well ascertained."—*Field Nat. Mag.*

INSECTS. It is the female only of the Musquito (*Culex molestus*) which is troublesome as a bloodsucker; causing a burning pain, fol-

lowed by an inflamed swelling, by the poisonous fluid she instils into the wound, for the purpose of rendering the blood thinner and more easily to be sucked. The species is so annoying, both to men and cattle, that some districts, where they are unusually abundant, have been quite abandoned by the colonists. This will not appear wonderful, when we find that Stedman and his soldiers were forced to sleep with their heads thrust into holes made in the earth with their bayonets, in order to escape from their tormenting bites. Baron Humboldt tells us the inhabitants are accustomed to stretch themselves on the ground, and pass the night buried in the sand three or four inches deep.—*Field Nat. Mag.*

Amount of Sunshine during the months of September and October.

	<i>Morning.</i>	<i>Evening.</i>	<i>Total.</i>	<i>Average Daily.</i>
<i>September</i>	34 hours.	49 hours.	83 hours.	2 hours, 46 minutes.
<i>October</i>	35 ditto.	30½ do.	65½ do.	2 h. 6 min. 46 sec.

HORTICULTURAL CALENDAR.

FOR DECEMBER.

FRUIT DEPARTMENT.

Apples.—Seeds of apples may be sown as the fruit ripens, p. 193. The trees newly planted should be mulched, if not done last month. Trees planted against walls, or as espaliers should be pruned. Cut off that part of the spur which bore fruit last summer, down to the fruit buds formed on the lower part of the stem of the spur, taking out all bruised and cankered branches, and leave a regular supply of wood throughout the whole. Those in orchards will merely require the branches so thin that they cannot injure each other by rubbing one upon the other.

Cherry Trees.—If they were much infested with the black aphs, during summer, may now have their winter dressing; see p. 246, or calendar for last month, p. 479. Cherry trees in tubs now brought into the forcing house will ripen their fruit in April. Those trees planted in the earth should be exposed to the weather, until the end of the month, or beginning of January, see p. 261. Prune all the sorts on the open wall, except the Morella, which will be better deferred until nearer spring.

Fig Trees.—On the open walls will require protection with mats, and the ground about their roots should have some litter laid upon it. Those in pots or tubs, now introduced into the forcing house, will produce fruit in March. Prune the trees planted in the fig-houses previously to commencing forcing in January or February.

Gooseberry and Currant Trees.—Should now be pruned. Cut away all shoots from gooseberry trees, except one or two springing as near as can be obtained from the origin of each main branch. Shorten the young shoot left at the top of each branch to about ten or twelve buds, and leave, throughout the tree, the fruit-bearing branches about six inches apart. In pruning the currant, keep a good supply of young shoots springing from the bottom of the tree, and cut out more or less of the old every year, never allowing a branch to remain more than four or five years, and head in the young shoots at the top to about two eyes of the main branch from whence they spring.

Grapes.—Vines in pots brought now into the vinery, will ripen their fruit in April. Those on the rafters should be fully exposed to the weather, previously to their being forced again.

Peach and Nectarine Trees, trained against the walls should have the nails and shreds drawn from the small branches, leaving only so many as will prevent the branches breaking or rubbing against each other in windy weather. The earliest peach-houses may be closed about the middle or end of the month, but the heat must be very moderate, not exceeding fifty-five degrees by day, and something less by night.

Raspberries in pots for forcing, in severe frosts, should have their pots covered with littery dung. If introduced at the end of the month, (sooner is not advisable,) they will produce ripe fruit in the beginning of April. Prune those in the open quarters, cut away all the shoots that bore fruit last summer, in the manner recommended p. 395.

Strawberries in Pots should now be regularly introduced into the forcing house or frame, as recommended last month.

FLOWER DEPARTMENT.

Auriculas and Polyanthuses must be well secured from frost, and have plenty of air in fine weather.

Camellias in Frames may be introduced into warmer situations to bring into flower. If the heat in which they are placed far exceeds fifty degrees Fahr, the flower buds are liable to fall off without expanding.

Chrysanthemums in Pots, will now be in full flower; give them a good supply of water and air, in fine weather.

Calceolarias, standing in the green-house, may some of them probably require potting; see p. 266.

Cyclamen persicum plunged in frames, as recommended p. 214, must be well preserved from severe weather.

Dahlia Roots must be well dried, previous to being laid up for winter, or they will be liable to rot.

Greenhouse Plants must receive very little water, and as much air as the weather will admit, and only fire sufficient to keep out the frost, and preserve the house perfectly dry.

Forcing. Introduce pinks, carnations, rhododendrons, roses, &c. into the forcing house, see p. 211. Roses now introduced produce flowers in February.

Mignonette, and Ten Week Stocks in Frames, must be exposed to the open air as much as the weather will allow, but they must be well secured from frost.

Tulip Beds must be sheltered from heavy rains or snows by mats or straw.

VEGETABLE DEPARTMENT.

Asparagus.--Continue planting roots in a hotbed frame, about every three weeks, as recommended last month.

Cauliflower Plants in Frames, or under hand glasses, must be well protected from frosts, and have as much air as the weather will permit.

Radishes now sown on a hotbed will be fit to draw in February.

Herbs in Pots should be introduced into the forcing house.

Lettuce Plants in Frames, or under hand glasses, must have abundance of air.

Mushroom Beds must be cleared from wet litter about every week, and a covering of dry hay put next to the bed, over which must be laid sufficient straw or other covering to preserve the beds from frost.

Peas and Beans should be sown in the beginning of the month, if the weather be mild, select a warm south border for the purpose.

Sea Kale.--Cover the roots with pots and dung, or without pots, at the option of the cultivator; see page 440.

ARTICLE V.

SELECTIONS OF THE BEST FRUITS CULTIVATED IN THIS COUNTRY.

APPLES.—TABLE USE IN SUMMER.

Borovitsky.

Early Red Margaret. syn. Red Juneating, Early Striped ditto,
Five Apple, Margaretha Appel, and Rother Jacob's Appel.

Oslin. syn. Original Pippin, Arbroath Pippin, and Orgiline.

* Summer Golden Pippin.

TABLE USE IN AUTUMN.

Court of Wick. syn. Wood's Huntingdon, Golden Drop,
Knightwick Pippin, Fry's Pippin and Phillips's Reinette.

Early Nonpariel. syn. Summer Nonpariel, Stagg's Nonpariel,
and Hicks's Fancy.

Fearn's Pippin.

Franklin's Golden Pippin. syn. Sudlow's Fall Pippin.

Hughes's Golden Pippin.

Golden Reinette. syn. Aurora, Yellow German Reinette, Eng-
lish Pippin, Wyken Pippin.

King of the Pippins. syn. Hampshire Yellow.

Margil. syn. Munche's Pippin.

Padley's Pippin. syn. Compôte.

Pine Apple Russet. syn. Hardingham's Russet.

* Ribstone Pippin. syn. Glory of York, Formosa Pippin, and
Travers's Apple.

TABLE USE IN WINTER.

Beachamwell. syn. Motteux's Seedling.

Courtpendu. syn. Courtpendu plat, Corianda Rose, Pomme de
Belin, Garnon's Apple, Wollaton Apple, Russian, Princesse Noble
Zoete.

Golden Harvey. syn. Brandy Apple.

Old Nonpariel, English Nonpariel, Duc d'Arsel, Hunt's Nonpa-
riel, Lovedon's Pippin, Grüne Reinette, Pomme-poire of some, and
Reinette Nonpariel.

Sam Young. syn. Irish Russet.

Boston Russet.

Sykehouse Russet. syn. Prager and Aclam's Russet.

KITCHEN USE IN SUMMER.

Alexander. syn. Russian Emperor, and Aporta.

Hawthorndean.

Keswick Codlin.

Wormesley Pippin. syn. Knight's Codlin.

KITCHEN USE IN AUTUMN.

Blenheim Pippin. syn. Blenheim Orange, Woodstock Pippin, and Northwick Pippin.

Brabante Bellefleur.

Gravenstein.

Kirk's Lord Nelson.

KITCHEN USE IN WINTER.

Beauty of Kent. syn. Kentish Pippin.

Alfriston.

Bess Pool.

Norfolk Beaufin.

Northern Greening. syn. John Apple, Cowarn Queening, and Walner Court.

Reinette du Canada. syn. Canadian Reinette, Janurea, Reinette du Canada blanche, Reinette Grosse de Canada, Reinette de Canada à côtes, Reinette de Cæn, and Portugal Apple.

APRICOTS.

Brussels.

Breda. syn. Brussels of some, de Holland, Amande, Aveline, Ananas, de Nancy of Sickler, and Hasselnussmanda Hemskirke.

Moor Park. syn. Anson's, Dunmore's, Dunmore's Breda, Temple's, Hunt's Moorpark, Oldaker's Moorpark, Sudlow's Moorpark, Walton Moorpark, and de Nancy.

Orange, for preserving. syn. Royal Orange, Royal, Royal George, Royal Persian.

* Turkey.

CHERRIES—See page 510.

CURRANTS.

Black Naples. syn. New Black.

Red Dutch. syn. New Red Dutch, Large Red, Large Bunched, Long Bunched, Morgan's Red, and Red Grape.

Knight's Sweet Red.

Common White.

White Dutch. syn. Jeeves's White, Morgan's White, Chrystal, Leghorn, and Pearl White of some, although the true Pearl White is a very inferior quality.

FIGS.

Black Ischia. syn. Blue Ischia of some.

Brown Turkey. syn. Brown Naples, Italian, and Murrey.

Brunswick. syn. Madonna, and Hanover.

Blanche Figue for forcing.

Genoa.

Marseilles, excellent forcer. syn. White Marseilles, Pocock, and Ford's Seedling.

Pregussata, good for forcing.

GOOSEBERRIES.—RED.

Beaumont's Red.	Berry's Farmer's Glory.
Champagne.	Crown Bob.
Keene's Seedling.	Leigh's Rifleman.
Roaring Lion.	Red Mogul.
Warrington.	Small Red Globe.

GREEN.

Hopley's Lord Crew.	Parkinson's Laurel.
Pitmanston Green Gage.	Gregory's Perfection.

WHITE.

Cleworth's White Lion.	Crompton's Sheba Queen.
Honey White.	Taylor's Bright Venus.
Wellington's Glory.	Woodward's Whitesmith.

YELLOW.

Hill's Golden Gourd.	Hebburn Yellow Aston.
Massey's Heart of Oak.	Yellow Champagne.

GRAPES—WALL.

Miller's Burgundy.	Cambridge Botanic Garden.
Grove End Sweet Water.	White Sweet Water.

VINERIES.

Black Frontignan.	Grizzly Frontignan.
White Frontignan.	Black Hamburgh.
Oldaker's West's St. Peters.	Braddick's Hamburgh.

STOVES.

Black Lombardy or West's St. Peters.	Muscat of Alexandria.
Cannon Hall Muscat.	Muscat Escholata.

MELONS—EARLY.

Large Germek.	Green Fleshed Masulipatam.
Green Fleshed Egyptian.	Early Cantaloup.

LATE.

Golden Rock.	Dampsha.
Cephalonian.	Green Housainee.
Keiseng.	Striped Housainee.
Sweet Melon of Ispahan.	Valentia.

NUTS.

Cob. syn. Large Cob, Barcelona, Prolific, Dwarf Prolific, Pearson's Prolific, Glasgow Prolific, St. Grisier, Downton Large.

Cosford. syn. Thin-shelled, and Miss Young's.

Northamptonshire Prolific.

Red Filbert. syn. Red Hazel, Landschappen, Langbartsnuss, Blutnuss, Roth Lambertsnuss, Avelinier Rouge, *Corylus tubulosa*.

NECTARINES—MELTING.

Brinion. syn. Brugnion red at stone, and Violet red at the stone.

* Duc de Tello. syn. Du Tilly's, and Du Tellier's.

Elruge. syn. Common Elruge, Claremont, Oatlands, and Temple's.

* Fairchild's. syn. Fairchild's Early.

Pitmaston Orange. syn. William's Orange, William's Seedling.

Hunt's Tawny. syn. Hunt's Early Tawny.

Violette Hâtive. syn. Violet, Early Violet, Lord Selsey's Elruge, Hampton Court, large Scarlet, new Scarlet, Vermash, and Petite Violette Hâtive.

CLING STONES.

* Newington. syn. Scarlet Newington, old Newington, Smith's Newington, French Newington, Brugnion de Newington de l'Angleterre, Rough Roman, Red Roman, Sion Hill, Anderson's Round, Round.

Early Newington. syn. Early Black Newington, Black, Early Black, New Early Newington, New Dark Newington, Lucombe's Seedling, Lucombe's Black.

* Tawny Newington.

Roman, Old Roman, Red Roman, Brugnion Musqué, Brugnion Violet, Musqué of some.

PEACHES—MELTING.

Late Admirable. syn. Royal, La Royal, Pêche Royale, Bourdine Boudine, Boudin, Narboune, French Bourdine, Teton de Venus, Belle Bausse of some, Judd's Melting, Motteux's.

Barrington. syn. Buckingham Mignonne.

Bellegarde. syn. Galande, Norie de Montreniel, Violette Hâtive of the English, Early Galande of some, Brentford Mignonne, Ronalds's Brentford Mignonne, French Royal George, smooth leaved Royal George of some, French Violette Hâtive:

Colonel Ansley's.

Knapp Castle Seedling,

Malta. syn. Italian, Pêche de Malta, Belle de Paris, Malta de Normandie.

Grosse Mignonne. syn. Grimwood's Royal George, Grimwood's New Royal George, Large French Mignonne, French Mignonne, Mignonne, Vineuse, Veloutée, Veloutée de Merlet, French Grosse Mignonne, Swiss Mignonne, Pourprée de Normandie, Pourprée Hâtive of some, Early Purple Avant, Purple Avant, Avant, Early



SECKLE PEAR.



ST. GERMAIN DE MARTIN PEAR.

French, Early Vineyard, Padley's Early Purple, Neil's Early Purple, Neal's Early Purple, Johnson's Purple Avant, Forster's, Forster's Early, Ronalds's Early Galande, Ronalds's Seedling Galande, Belle Bause, Belle Bause, Belle Beaute, Early Vineyard, Kensington Royal Sovereign, Superb Royal Vineuse de Fromenti, and Transparent.

Noblesse. syn. Mellish's Favourite, Vanguard.

Royal George. syn. Millet's Mignonne, Red Magdalen, French Chancellor, Madeleine Rouge à Petites Fleurs, Lockyer's Mignonne, and Early Royal George.

Royal Charlotte. syn. Early Purple of Kew, Madeleine Rouge Tardive, Madaleine Rouge à Moyennes Fleurs, Madaleine à Petites Fleurs, Lord Nelson's, New Royal Charlotte, Grimwood's Royal Charlotte.

CLINGSTONES.

Catherine.

Williams's Catherine.

Old Newington. syn. Newington.

PEARS.—See page 485.

PINES.

Queen.

Moscow Queen.

Lemon Queen.

Ripley.

Black Jamaica.

Brown Sugar Leaf.

Black Antigua.

Enville.

St. Vincent's.

White Providence.

PLUMS.

b Azure Hâtive. Wall, Std.

b Kirks. Wall.

b Blue Imperatrice, E. or W. Wall.

r Orleans. Std. Wall.

y Catherine. Wall, Std.

b Nectarine. Wall and Std.

y Coe's Golden Drop. St. W.

b Lucombe's Nonsuch. Std.

y Drap'd'or. Wall and Std.

b Shropshire Damson. Std.

r Early Orleans. Std. Wall.

b Reine Claude Violet. Wall, Std.

y Green Gage. Wall.

y White Magnum Bonum. Wall

b Imperial Diadem. Wall

b Blue Perdrigon. Wall. Std.

RASPBERRIES.—See page 395.

STRAWBERRIES.

Black Roseberry.

Grove End Scarlet.

Roseberry.

Downton.

Keene's Seedling.

Large Flat Hautboy.

Carolina or Old Pine.

Prolific Hautboy.

The Apricots, Apples, Pears, Peaches, Nectarines and Plums, in the above selection, will, with a few exceptions, thrive in the North-

ern, as well as the Southern and Midland Counties. Those marked with a star will probably require rather warmer situations than the others.

APRICOTS far North will require a South, South-east, or South-west Wall, particularly the Breda and Turkey.

FIGS in high situations, far North, will not produce advantageously without the aid of fire, or glass. The best for forcing are the *Marseilles*, *Pregussata*, and *Blanche Figue*; the other sorts will also produce pretty well, when forced, but are not to be depended upon like these three.

The **GOOSEBERRIES** are selected chiefly for flavour, although some of them are of a very large size.

The **GRAPES** selected for Walls, Vineries and Stoves, are not to be understood as binding the cultivator, to plant them in no other situations. Those marked "*Wall*" will ripen well in the open air in a fine season, but may, if thought best, be planted in a Vinery where they will produce abundant crops. Those marked "*Vinery*" cannot be depended upon for producing crops in the open air, but need more heat than the last to bring them to perfection; they may, if necessary, be planted in a Stove, where they will produce early and abundant crops. Those marked "*Stove*" will not thrive properly in any but stove heat.

In selecting the **MELONS**, we have chiefly confined ourselves to the Persian Varieties, as from the thinness of their skins, and their peculiarly rich flavour, there is no comparison betwixt them and the old ones.

Of the **PLUMS**, the marks attached to them are intended to show the situation they should occupy in the Garden, and the colours of the fruits. *Std.* is placed for Standard Tree, *W.* for Wall Tree; and when both these signs are attached to one name, they will do in either situation. *b*, for blue, *y*, for yellow, *g*, for green, and *r*, for red, alluding to the colour of the fruit.

The **SYNONYMS**, or Provincial names, are attached to the Apples, Apricots, Figs, Nuts, Peaches, Nectarines and Currants, to obviate the difficulty in purchasing, as from the multitude of names attached to some of the sorts, it is no easy matter to distinguish them.

Chatsworth, Oct. 30th.

J. P.

ARTICLE VI.

LIST OF THE BEST VEGETABLES IN CULTIVATION.

Artichokes.—The Globular is the only one worth Cultivation.

Asparagus.—Battersea and Gravesend.

Beans.—Early Lisbon, Longpod, and Windsor.

Beet.—Large Rooted for Slicing, and the Green and White for Leaves.

Broccoli.—Early purple Cape, Grange's Early White, Early Sprouting, Green's close-headed Winter, Impregnated Early White, Portsmouth, Spring White, Knight's Self-protecting and Siberian.

Cabbages.—Early Dwarf, Early York, Vanaack, Battersea Early Imperial, and Red Dutch.

Cardoon's.—Spanish, and Cardoon of Tours.

Carrots.—Early Horn, Long Orange and Altringham.

Cauliflowers.—Early and Late.

Celery.—Red Solid, Manchester Large, and Turnip rooted.

Cucumbers.—Knowsley, Southgate, Kerrison's Hothouse, Serene, Walker's Long, and Walker's New.

Endives.—Small Batavian, and Small Green Curled.

Kidney Beans.—Scarlet Runner, Cream Coloured, Liver Coloured, Early Dun, and Black Speckled.

Leeks.—London Flag.

Lettuces.—Hammersmith Cabbage, Imperial Cabbage, Brown Silesia Cabbage, Bath Coss, Black Seeded Green Coss, Egyptian Coss, and Brighton Coss.

Onions.—True Portugal, Spanish Deptford, James's Long Keeping, Stratsburgh, Tripoli, Silver skinned and Welsh.

Parsnips.—Guernsey, Hollow Crowned.

Peas.—Single and Double Blossomed Frame, Blue Prussian Dwarf Green Imperial, Green Marrow, Tall Green Imperial, Knight's Tall Marrow, Groom's Suberb, Knight's Dwarf Marrow.

Potatoes.—Early Kidneys, Early Manly, Early Shaw's, Champion's, Bread Fruits, Taylor's Forty-folds.

Radishes.—Early Frame, Short-topped, Crimson and White Turnip Rooted.

Rhubarb.—See p 154.

Salsafy or *Tragopogon porrifolius*, *Scorzonera hispanica*, or Spanish.

Sea Kale.—*Crambe maritima*.

Shallots.—*Allium ascalonicum*, and *Garlie*, *Allium sativum*.

Spinach.---Prickly, Round Seeded, and Flanders.

Turnips.---Early Dutch, Early Dwarf and Early Stone.

Winter Greens.---Green Savoy, Brussel Sprouts, Curled Kale.

ARTICLE VII.

HEAVIEST GOOSEBERRIES GROWN IN 1833.

BY M. SAUL.

YOUR correspondent W. T. p 517 enquires whether I am likely to publish a work on the Culture of the Gooseberry, I beg to say I am not, but I intend shortly to forward for the Register a few remarks on the Culture, together with a drawing to illustrate what I may advance. I herewith send a list of the leading sorts for 1833. They have not grown so large this year as last, nor have so many new seedlings appeared. It seems there are 3 Reds, 2 Yellows, 4 Greens, and 6 Whites. The heaviest seedling grown this year was 21 dwts. 11 grs. a red berry, raised by Mr. Stephen Johnson. Mr. Brather-ton last year had a green seedling which weighed 30 dwts 18 grs. The following are the weights of 10 of each colour in 1833.

REDS.		dwts.	grs.	GREENS.		dwts.	grs.
Wonderful	27	17		Peacock.....	23	4	
Briton	25	18		Thumper	22	5	
London.....	25	14		Providence	20	17	
Lion.....	24	11		Overall.	20		
Companion	24	2		Ocean	19	12	
Atlas	71	20		Favourite....	18	19	
Royal George.....	21	20		Little thought of...	18	16	
Albion.....	21	10		Green Prince	18	12	
Guido	21	9		Invincible	18	11	
Sir John	21	5		Travelling Queen	18	8	
YELLOWS.		dwts.	grs.	WHITES.		dwts.	grs.
Gunner	25	2		Eagle	23	11	
Shuttle	23	16		Fleur de Lis	21	1	
Leader.....	21	23		Lioness	19	22	
Teazer.....	20	18		Lady of the Manor	19	19	
Duckwing	20	5		Competitor.....	19	19	
Bunker's Hill.....	20	2		Delamere	18	21	
Globe	19	20		Ostrich.....	18	17	
Rockwool	19	6		Nonpareil	18	16	
Husbandman	18	12		Queen Adelaide ...	18	14	
Two to One.....	18	12		Lord Valenora.....	18	6	

Lancaster, Nov. 6th, 1833.

ARTICLE VIII.

SALFIGLOSSIS INTEGRIFOLIA.

CALLED also *Petunia violacea*, and *Nierembergia phænicea*. We have adopted the first name, not because we consider it superior to the others, but because the plant is best known by that name. It is the name given to it by Dr. Hooker, but Mr. Don, in *Sweets Flower Garden*, has referred it to *Nierembergia*, and Dr. Lindley on a further investigation considers it a *Petunia*. There are but few plants in our gardens which surpass this in brilliancy of blossoms and general beauty. It is a native of Buenos Ayres, from whence seeds were received at the Glasgow Botanic Garden. It succeeds extremely well in the open border, during summer, but must be treated as a greenhouse plant in winter. It forces well; and when grown in a greenhouse, with its branches tied to the bars of a trellis, it soon covers a space three or four feet square with its leaves and flowers. When planted out of doors a whole bed should be entirely devoted to it, if convenient, so that the branches can be allowed to spread carelessly and become entangled with each other. It then continues flowering from August to the middle or end of October; if the weather be mild. Some beds, so planted at Chatsworth, last summer, made a very splendid show. It will grow in any soil, but thrives best in one that is rich and has been long cultivated. And it requires rather a sheltered situation. It will readily increase by cuttings, which may be put in at almost any season, and treated like those of the *Geranium*. It also produces seeds, and this is the best mode of increasing it.

ARTICLE X.—LIST OF NEW AND RARE PLANTS,

NOTICED IN THE SECOND VOLUME.

	<i>Page</i>
<i>Agrostemma pyreniaca</i> , h p	421
* <i>Alpinia?</i> <i>magnifica</i> , s s	81
* <i>Alströmeria aurantiaca</i> , f b	468
* ————— <i>psittacina</i> , f b	82
* <i>Amelanchier florida</i> , h s	324
<i>Andromeda Jamaicensis</i> , g s	82
* <i>Aristolochia cymbifera</i> , s s	81
* <i>Arabis rosea</i> ,	325

	<i>Page</i>
<i>Aster fragilis</i> , n p	37
<i>Astragalus procumbens</i> , f p	466
* ——— <i>vesicarius</i> , f p	466
* <i>Auricula Waterhouse's</i> , f p	401
* <i>Azalea pontica versicolor</i> , h s	132
<i>Bartonia albens</i> , f a	183
<i>Beaufortia Dampieri</i> g s	513
* <i>Beaumontia grandiflora</i> , s s	131
* <i>Benthamia fragifera</i> , h s	276
<i>Berberis buxifolia</i> , h s	372
<i>Blechnum gracile</i> , s f	229
<i>Bletia acutipetala</i> , g p	135
<i>Brassavola Perinii</i> , s p	135
<i>Burtonia conferta</i> , g s	137
* <i>Cactus speciosissimus lateritius</i> , s s	371
<i>Calathea orbiculata</i> , s p	83
* <i>Calaprora lutea</i> , h p	325
<i>Calceolaria crenatiflora</i> , f p	421
* ——— <i>purpurea elegans</i> , f p	372
——— <i>Herbertiana parviflora</i> , f b	228
——— <i>integrifolia viscosissima</i> , g p	131
* ——— <i>Atkinsiana</i> , h b	37
<i>Calandrinia arenaria</i> , h a	420
——— <i>peciosa</i> , h a	371
* <i>Calochortus luteus</i> , h p	183
* <i>Calophanes oblongifolia</i> , h p	182
* <i>Caralluma fimbriata</i> , s s	35
* <i>Catasetum trifidum</i> , s o	467
* <i>Cephalotus follicularis</i> , g p	365
<i>Ceropegia Wightii</i> , s p	467
* <i>Cereus Mallisoni</i> , s s	161
——— <i>setosus</i> , s s	82
<i>Chorizema spartioides</i> , g s	419
* <i>Cineraria Tussilaginis</i> , g a	131
<i>Cirrhaea viridipurpurea</i> , s o	467
<i>Clarkia elegans</i> , h a	228
<i>Collomia lateritia</i> , h a	466
<i>Corydalis longiflora</i> , g p	228
<i>Costus pictus</i> , s p	325
* <i>Cryptophragmium venustum</i> , s s	132

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* <i>Cyrtanthus spiralis</i> , g p	373
* <i>Dahlia Levicks Commander</i> , h p	49
* <i>Dendrobium pulchellum</i> , s o	325
* <i>Dianthus Libanotis</i> , f b	32
<i>Duvaua ovata</i> , f s	182
—— <i>latifolia</i> , f s	276
* <i>Epacris campanulata</i> , g s	277
—— <i>alba</i> , g s	325
—— <i>cæriflora</i> , g s	325
<i>Epidendron Harrisoniæ</i> , s o	135
—— <i>pygmeum</i> , s o	229
<i>Erythrina velutina</i> , s s	227
<i>Erica cantharæformis</i> , g s	467
—— <i>quadrata</i> , g s	372
* <i>Gladiolus pudibundus</i> , h p	183, 305
<i>Gompholobium venulosum</i> , g s	227
—— <i>capitatum</i> , g s	132
* <i>Gongora maculata</i> , s o	513
<i>Hedychium stenopetalum</i> , s p	229
<i>Helleborus niger vernalis</i> , h p	228
* <i>Iris reticulata</i> , h p	277
—— <i>hungarica</i> , h p	468
<i>Ledebouria hyacinthina</i> , s p	183
* <i>Leucopogon parviflorus</i> , g s	132
<i>Loasa alba</i> , h a	276
—— <i>Placei nov. var.</i> , h p	131
* <i>Lobelia speciosa</i> , h p	82
—— <i>colorata</i> , h p	131
—— <i>mucronata</i> , h p	132
* <i>Limnocharis Humboldti</i> , s p	373
<i>Lichnis Pyreniaca</i> , h p	513
<i>Lupinus elegans</i> , h p	277
—— <i>rivularis</i> , h p	371
<i>Lysimachia Azorica</i> , f p	514
<i>Malesherbia coronata</i> , h a	37
<i>Malva umbellata</i> , s s	423
<i>Manettia cordifolia</i> , s s	37
* <i>Maxillaria Warreana</i> , s o	33
* ——— <i>atropurpurea</i> , s o	85
—— <i>decolor</i> , s o	85
—— <i>punctata</i> , s o	228

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Maxillaria ochroleuca, s o	229
Melaleuca Fraseri, g s	132
Mentzelia hispida, f s	37
* Mimulus variegatus, h b	81
* ——— roseus, g p	325
* Myrsine capitellata, s s	183
Nanodes discolor, s o	85
Nemophila aurita, h a	372
Nicotiana longiflora, f a	324
———— persica, f a	324
Ænothera concinna, h a	182
———— densiflora, h a	324
* ——— tenella tenuifolia, h a	353
* Oncidium cornigerum, s o	85
* ——— Harrisonæ, s o	183
Ophiopogon Jaburan, g p	83
Opuntia aurantiaca, s s	420
Orobus aureus, h p	419
Oxalis Cummingii, h a	81
———— Brasiliensis, g p	467
Papaver persica, h a	182
* Passiflora phœnicea, s s	420
Pharium fistulosum, f p	82
Physianthus albens, s p	35
Pimelea arenaria, g s	513
———— sylvestris, g s	467
———— hispida, g s	228, 467
Plagianthus divaricatus, g s	513
* Platylobium obtusangulum, g p	419
* ——— Murrayanum, g s	419
Potentilla glandulosa, h p	277
Pultenæa subumbellata, g s	371
———— rosmarinifolia, g s	277
Rhododendron campanulatum, h s	372
* Rondeletia speciosa, s s	133
Ruellia oblongifolia, s s	132
Rubus roridus, g s	420
* Salpiglossis linearis, g p	419
* ——— integrifolia, g p	549
* Salvia fulgens, g s	227
Sauroglossum elatum,	514

	<i>Page</i>
* Schizanthus retusus, g a	37
* ————— pinnatus humilis, h a	182
Scilla villosa, f p	135
Sisyrinchium maculatum, g p	82
* Solandra guttata, s s	81
Solanum runcinatum, h p	131
———— ligustrinum, g s	467
———— crispum, h s	419
Stenactis speciosa, h p	228
Stylidium hirsutum, g s	37
Trifolium uniflorum, f p	82
Trillium erectum viridiflorum, h p	373
* Tropæolum majus atrosanguineum, h a	421
Witheringia purpurea, g p	182
Wrightia pubescens, s s	277
Xyris altissima, g p	135
* Zygotetalon stenochilum, s o	277
f a Frame Annual.	h a Hardy Annual.
f b ——— Biennial.	h b ——— Biennial.
f p ——— Perennial.	h p ——— Perennial.
f s ——— Shrub.	h s ——— Shrub.
g a Greenhouse Annual.	s b Stove Biennial.
g b ——— Biennial.	s p ——— Perennial.
g p ——— Perennial.	s s ——— Shrub.
g s ——— Shrub.	s o ——— Orchidea.

Hardy Plants are such as require no protection at all.

Frame—Such as require protecting from the severity of Frost, &c.

Greenhouse—Such as require rather more tender treatment.

Stove—Requiring a strong heat to grow them to perfection.—See pages 373 and 421.

Those marked with a Star are the most beautiful.

ERRATA.

Page	2,	line	12 from bottom	for	"Choncology read Conchology.
7,	"	15	"	top	"Abundant read Abundance.
13,	"	9	"	bottom	"scalced" read scalded.
	"	5	"	"	"148" read 149.
	"	u	"	"	"they" read it.
	"	11	"	"	"scalced" read scalded.
14,	"	15	"	"	"Cactut" read Cactus
21,	"	22	"	top	"the" read to.
23,	"	8	"	bottom	"common" read uncommon.
30,	"	21	"	top	"mieranthus" read micranthus.
	"	11	"	bottom	"Eucroma" read Euchroma.
	"	3	"	"	"Nicotiana" read Nicotiana
37,	"	11	"	"	"annuai" read annual.
42,	"	14	"	"	"praire" read prairie.
44,	"	8	"	top	"Justica" read Justicia.
	"	7	"	bottom	"siliqua" read saligna.
63,	"	1	"	top	"Astrickles" read Astragals.
70,	"	19	"	bottom	"tree, like" read tree-like.
71,	"	9	"	top	"acaru" read acarua.
76,	"	15	"	bottom	"he very" read he was very.
104,	"	4	"	bottom	"had six" read send six.
106,	"	7	"	top	"Astrickles" read Astragals.
106,	"	4	"	bottom	"Astrickles" read Astragals.
106,	"	12	"	bottom	"Astrickles" read Astragals.
135,	"	11	"	top	"Perinu" read Perinii.
199,	"	13	"	bottom	"gooseberry's" read gooseberries.
165,	"	11	"	top	"eighteen" read eight.
218,	"	12	"	top	"bona" read bono.
234,	"	6	"	bottom	"Banksiae" read Banksia.
279,	"	1	"	bottom	"Bulkeley" read Berkeley.
290,	"	17	"	top	"mangifera" read Mangifera.
303,	"	7	"	bottom	"Mumea" read Humea.
313,	"	2	"	top	"insects" read vessels.
316,	"	9	"	top	"Chenepedium" read Chenopodium.
317,	"	15	"	bottom	"Berberis Vulgaris" Berberis vulgaris.
325,	"	2	"	"	"Calliprova" read Calliprora.
365,	"	7	"	"	"Labellardieve" read Labellardiére.
366,	"	2	"	top	"Dischridia" read Dischidia.
366,	"	16	"	"	"forms an" read forms at the.
376,	"	7	"	bottom	"injured" read appeared.
378,	"	14	"	"	"Oceami" read Oceanic.
420,	"	15	"	top	"arenavia" read arenaria.
420,	"	8	"	"	"palata" read alata.
443,	"	7	"	"	"graveoleus" read graveolens.
457,	"	9	"	"	"these" read this.
467,	"	2	"	bottom	"tritidum" read trifidum.
70,	"	2	"	top	"four" read forth.
70,	"	42	"	"	"May" read March.
71,	last line				"C. laurifolia" read E. laurifolia.
124,	"	11	"	bottom	"heel" read wheel.
125,	"	8	"	top	"after upper petal ascending" read
			Ala, wings two		inner petals covering the carina.
163,	"	9	"	top	"two barrowful" read one barrowful.
	"	10	"	"	"one barrowful" read two barrowful.
361,	"	6	"	bottom	"pentapetalous" read hexapetalous.
362,	"	15	"	top	"eight petals" read six petals.

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